

# FLIGHT

*The*  
AIRCRAFT ENGINEER  
AND AIRSHIPS

*First AERONAUTICAL  
WEEKLY IN THE  
WORLD*

*Founded in 1909 by Stanley Spooner*

DEVOTED TO THE INTERESTS,  
PRACTICE AND PROGRESS  
OF AVIATION

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## Prospects in India

**H**E. LORD WILLINGDON has for years past been a regular user of aircraft as a means of saving time on his numerous official journeys about India. His flying holiday to this country, however, seems to have spurred him on to new enthusiasms and activities. As most of us realise in August and September, a little leave refreshes the mind and enables a man to return to his work with a much more cheerful outlook. For some years past the mind of the Government of India has been depressed and depressing on the subject of civil flying, but the moment the Viceroy returns from leave he approaches the subject quite cheerfully and says that the Government is going to do all sorts of things which really ought to have been done some time ago.

The two great air routes in India are Karachi-Rangoon and Karachi-Madras, the former run by Imperial Airways and Indian Transcontinental Airways in conjunction, and the latter by the Tata firm. The Viceroy has announced that the Government hopes to equip those two up to modern standards within the next few years, financing the schemes by means of a programme of development loans. This seems to imply that the airways are expected to show a profit some day, and we are now approaching the point when such an expectation is not thought unreasonable. It is not clear whether the term modern standards includes provision for night flying. That must certainly come sooner or later, but it is not the primary need on the two routes mentioned above.

Two other lines have been suggested, Karachi-Lahore by Indian National Airways, and Bombay-Calcutta by the Tata firm. The former should be a useful feeder line from the main trunk line, and we hope to see many such branch lines in India in the near future. The Bombay-Calcutta route stands by itself, having nothing to do with the trunk line, but being of itself of outstand-

ing importance. The two foremost commercial cities of India need an air connection very badly, and this line should be the most up-to-date line in the British Empire. The Tata proposals were for a daily service in each direction, which is certainly the first essential, and as each service must get through in the day, flying by night will be necessary at both ends. That will mean some rather high expenditure, but the difficulties ought to be faced, for the case is a special one. Negotiations between the Government and the Tata firm are still going on, and both sides are keen bargainers, but it is very cheering to hear the Viceroy say that he hopes that both these new routes will soon be opened and that the Government is prepared to organise them too up to modern standards. Once a good beginning has been made, civil flying should have a really great future in India.

## Combined Operations Exercises

**I**T has already been stated briefly in the columns of *Flight* that an exercise in combined operations by the Navy, Army, and Air Force will take place off the coast of Yorkshire next week. Details of the scheme will be published in due course as they become available. What can be said at present is that these Exercises are merely a practice, somewhat on the lines of the coast defence Exercises held a year ago off the coast of Scotland. Last year only the Navy and Air Force were engaged; this year the Army is also taking part.

One of the lessons of last year's Exercises, as also of the Air Exercises in July, is that some sections of the Press and the public will insist that they prove something or other, either that the Air Force can bomb the Navy to Davy Jones in five minutes, or that London can be obliterated by enemy bombers in about the same time, or some such fantastic theory. It cannot be repeated too often that an Exercise of this sort is but an

exercise, and is not a test of anything. If we ever have to engage in war again, combined operations by two or more of the Services are certain to take place. If they have never practised working together, confusion is certain and disaster would be probable. Therefore the only wise thing to do is to give them plenty of opportunity for practising together in peace time. Last year the Exercises were so elementary that they seemed to some to be almost farcical, but, nevertheless, they were useful practice. The Exercises this month, with all three Services engaged, will be a little more elaborate, but still there is sure to be a lot of make-believe. That is inevitable, but it does not make the practice useless. Combined operations, when there is no one commander-in-chief but three commanders have to work in unison, are always a complicated affair. They were difficult enough in the old days when there were only two Services, and now they are even more complex. Once again we ask our readers to keep their heads and to lend no ear to sensational theories in the more lurid newspapers.

## Another Grid Crash

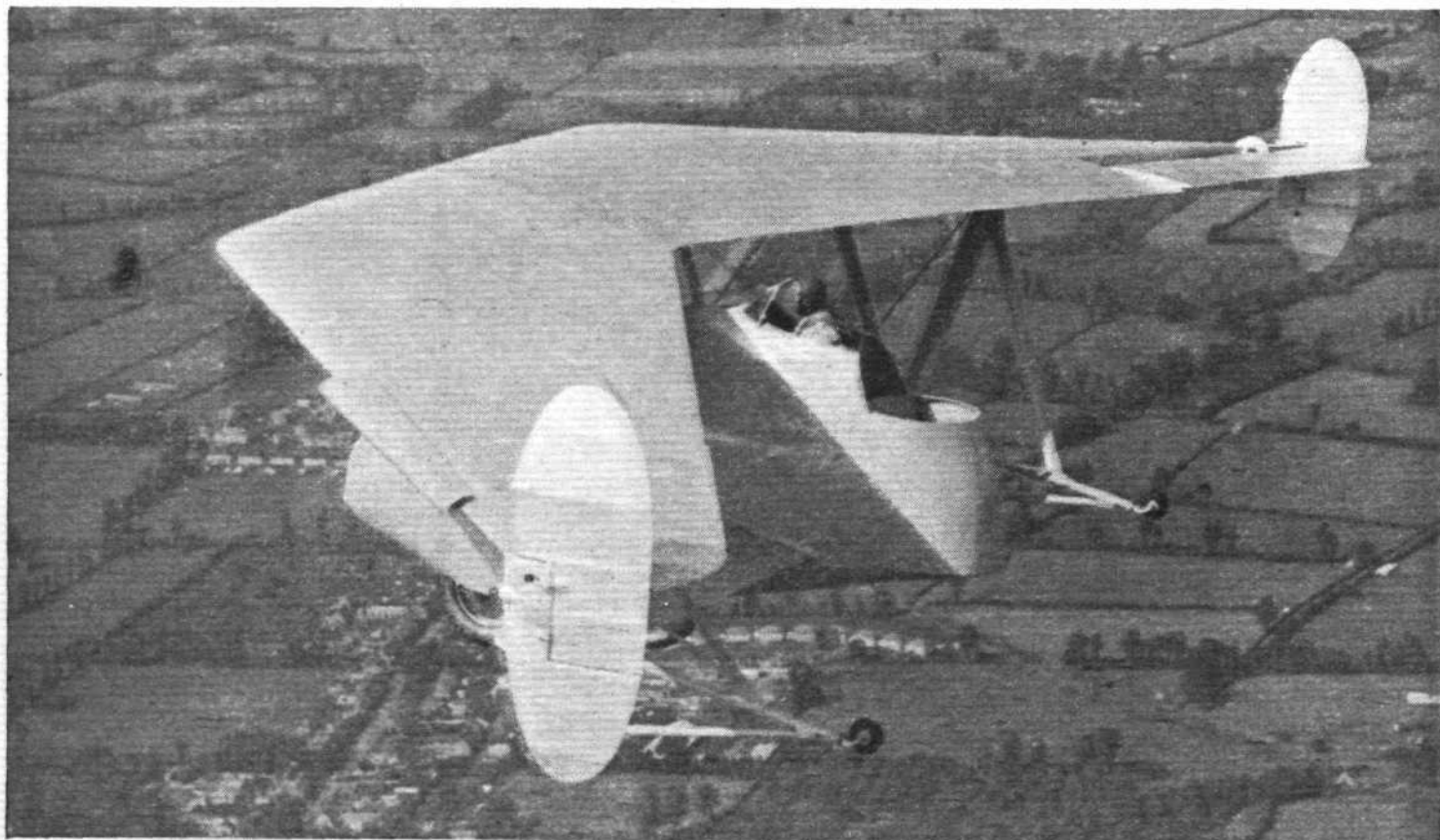
**W**E have more than once called attention to the danger caused to aircraft by the pylons and cables of the electric grid, and now another accident has happened through an aeroplane flying into a cable. This time it was an aeroplane of the R.A.F. which suffered, and the pilot was severely injured. It seems that he was at the time flying in formation, and probably was paying more attention to keeping station on his leader than to watching for obstructions in the air. Without knowing the full facts it is not possible to say whether the leader ought to have kept a more

vigilant look-out for the cables, but it seems that there will always be a risk to formations from the grid, even in clear weather. In bad visibility all aeroplanes are in danger, and the thought is very disturbing. Unfortunately, the grid was erected at a time when flying was just on the point of becoming an important matter, but had not yet become so important as to be weighed against the interests of a great electrical system. In the future the interests of flying will always have to be considered before the nation embarks upon great engineering undertakings. In the meantime the question must be asked: Is the overhead system of cables quite irrevocable?

## A Fortnight's Experience

**I**N the first fortnight of their existence the new air-mail services have not carried very large loads of mails. The daily load for Glasgow has varied between 30 and 40 lb. Officials hopefully remark that there has been an upward tendency, but not much can be deduced from such a very short experience. The wonder is that, with the present schedule, anybody at all thinks it worth while to send letters by the north-bound mail. That it has been popular with passengers is rather beside the point, for the interest of the experiment lies in the carriage of mails, and we believe that it is chiefly mails which can make the service a success. The south-bound mail is already useful because it starts early from Glasgow. The north-bound mailplane from Croydon should do likewise.

The system of a circular tour in the day, starting from Glasgow and ending at the same place, suggests the sort of economy which fails to earn profits, whereas greater facilities should bring in better returns.



THE NEW "PTERODACTYL V": With its Rolls-Royce "Goshawk" steam-cooled engine of some 700 h.p. this machine has a very wide speed-range, and the fighting view and field of fire are uncommonly good. The machine is described and illustrated on pp. 914-916. (*Flight* Photo.)



# The Outlook

## *A Running Commentary on Air Topics*

### *Ordnance Survey Revision*

**B**EFORE any authority can proceed with town planning or similar development work, and obtain approval from the Ministry of Health for its schemes, these must be shown on an up-to-date 1/2,500 scale Ordnance Survey Plan. Some of the Survey Plans were last revised nearly forty years ago, and so fast is the present development work going ahead that there is considerable danger that the revision, if continued on the present lines, may never catch up, and the money spent on it will be wasted. This is a case where the value of air survey is readily apparent, and the proposals placed by H. Hemming & Partners, Ltd., before the Ordnance Survey department show that there should, even with our English weather, be little difficulty in producing revised plans of the town-planning areas of England and Wales in two years if air survey methods are adopted. We shall be hearing more about these proposals.

### *A Town-planning Suggestion*

**P**UBLICITY has recently been given to the question of Ordnance Survey plans, which are said to be out of date, and the suggestion was thrown out in one quarter that one of the new R.A.F. squadrons should be dedicated to aerial surveying of built-up areas. This is not a suggestion which can be approved. Every one of the new squadrons will be obliged to spend every minute of its time in preparing to play its part in the air defence of the country. Moreover, it is not economical or good business to use a fighting Service for the civil work of the Government. Very efficient air survey companies exist, which are available to undertake any survey work which the Government requires. No one would suggest that the Royal Engineers should be called in to do the ground work of the Ordnance Survey, so why suggest diverting the Royal Air Force from its proper work?

### *Flying High*

**C**ERTAIN air lines which fly over the Alps often do so at an altitude of over 14,000ft., and sometimes even over 16,000ft. At least one of them has an oxygen supply laid on to each passenger's seat, but another has not. Now, 16,000ft. is already in the zone at which, according to the latest American statistics, oxygen is necessary for some people, generally only those who are not in good health or who are unusually corpulent; but, nevertheless, it is an altitude at which many people will feel uncomfortable, even if their hearts are strong. As far as we can learn, no attempt is made on these lines to find out from passengers whether they are fit to fly at this altitude. We do not suggest that they should be medically examined or that undue stress should be laid upon the shortness of breath they may experience, but it would certainly seem a sensible precaution if the attention of passengers travelling on these lines was drawn to the danger of doing so if they suffer with weak hearts.

### *Talk During Instruction*

**F**LYING instructors vary considerably in their methods, but we have yet to meet one who seems fully to appreciate the value of separating talk and action. In every other walk of life it has been proved that pupils cannot assimilate both at the same time. They cannot profitably be talked at while learning some new action. Verbal ex-

planation should be followed by the action, and a corrective explanation should follow the pupil's action, but corrective explanation should never be interpolated during the pupil's actions. It is an old adage that man cannot do two things at the same time, perhaps not quite true in all cases, but a pupil certainly cannot, efficiently, remember what he has previously been told, fly a machine, and listen to an instructor telling him what he is doing wrong—all at the same time; but that is what some instructors want.

### *Landing in Fog*

**B**EFORE air line operation can become really regular, methods must be perfected whereby aeroplanes can be landed with safety when, as in fog, the pilot cannot see the ground. We in this country are still behind others in this particular field. In Germany, not only have experiments at the Templehof Aerodrome of Berlin proved very satisfactory, but Königsberg, Munich and Frankfurt are being similarly equipped. A supplementary radio beacon giving the angle of descent has been tried out by Luft Hansa and also by the K.L.M. company in Holland. Our own experiments have, as far as is known, been confined to those by the Royal Air Force at Farnborough. Yet we probably have a larger percentage of foggy days each year than most other countries.

### *Straws*

**N**OT without certain misgivings can one view recent developments in flying boat work abroad. The Americans have lately launched their "Brazilian Clipper," a machine which, with a range of some 1,400 miles, carries a pay load of 8,000 lb. The Germans have added another "catapult-cum-apron" ship to assist the *Westfalen* in servicing the Dornier flying boats in the South Atlantic. The seemingly fantastic project of "seadromes" may be a little less fantastic than most people would think, and the experiments are to continue. In France, Monsieur Lioré, head of the Lioré and Olivier firm, has published a scheme for combining the efficiency, in the matter of first cost, running cost and pay load, of the landplane with the ability not only to remain afloat but to get off the sea again with a light load. His scheme, broadly, is to make a machine which in strength and lightness will bear comparison with a landplane, but having a hull-shaped fuselage which would enable the machine to float, manoeuvre and take off with a reduced load. Normally the machine would operate as a landplane, but the undercarriage would be capable of being raised, the wheel fairings being constructed to act as outboard floats. Should the machine have to come down on the sea, it would, M. Lioré maintains, be able to float until help arrived, and after the pay load and possibly some fuel had been transferred, it would be able to get off the water again and reach land, so that the machine would not be a total loss.

A few years ago we in Great Britain had an undoubted lead in the design of seaworthy flying boats. As an economy measure we abandoned the Supermarine commercial boat when it was half finished. Since then we have concentrated on military types, of which some excellent examples have been produced. But what are we proposing to do about commercial flying boats? It has been stated that Short Brothers are building one for Imperial Airways, but it must be some time before that is finished. One would like to believe that this country had a clear-cut flying boat policy, but this does not appear to be the case. We have the technical ability, so why not use it?

# THE FIGHTING "PTERODACTYL"

*Coupled with a very wide speed-range, the latest Westland Machine has an exceptionally wide Field of Fire*

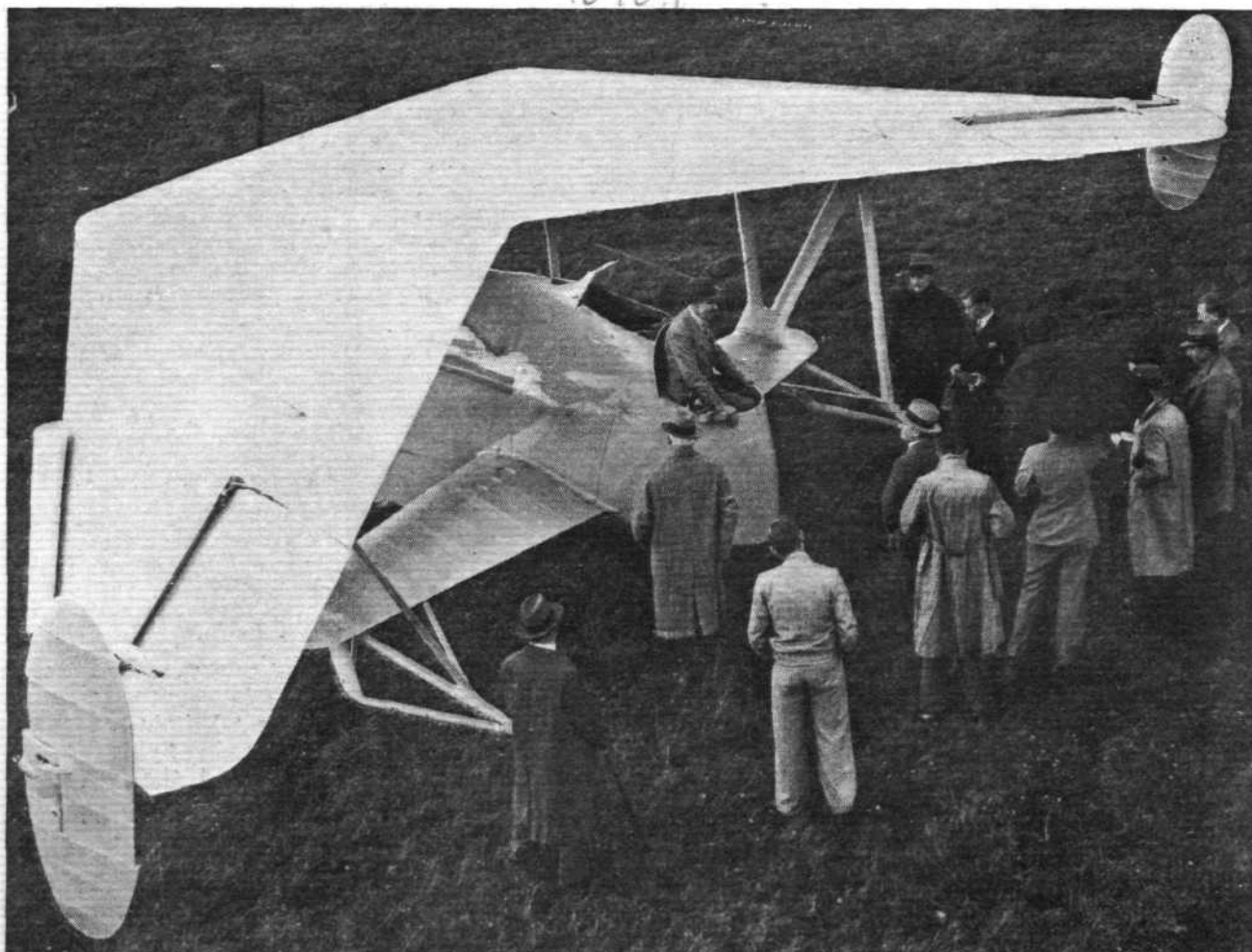
By C. M. POULSEN

WHEN Capt. G. T. R. Hill first conceived the idea of the "tailless" aeroplane, his main objective was an aerodynamic rather than a military one. He, like most of us at the time, was distressed at the thought of the number of accidents, mostly fatal, which were resulting from stalls followed by spins. His first machine appeared in 1926, and was driven by a Bristol "Cherub" engine, a small flat twin air-cooled of some 30 h.p. Since those early days Capt. Hill has worked away quietly at the task of developing and perfecting the "tailless" principle. Some years ago he joined the Westland Aircraft Works at Yeovil, and with that move fresh impetus was given to the development programme. Several types of "Pterodactyl" have made their appearance, and one or two have appeared at Royal Air Force Displays at Hendon. It was somewhat unfortunate that they were always included among unorthodox aircraft. The result was that in the mind of the general public such machines as the Handley-Page "Gugnunc," the Cierva "Autogiro," and the Hill "Pterodactyl," came to be regarded as jokes, as something introduced to give "comic relief." Actually, all three types have their very serious purpose, and each of the three marks a contribution to the general endeavour towards better and safer aircraft.

The Westland-Hill "Pterodactyl" series has reached the Mark V stage. In *Flight* of August 16 we published the first photograph to be released of this machine, a two-seater fighter fitted with the 700 h.p. Rolls-Royce "Gos-

hawk" steam-cooled engine. Previous to the introduction of this new military type, the most powerful "Pterodactyl" built had the 120 h.p. "Gipsy Three" engine. It will thus be seen that in going from this to the Mark V a very bold step was taken. A visit to the Westland works at Yeovil last week for the purpose of witnessing test flights indicated that the courage of the designer and constructors appears to have been rewarded with success. The new machine handles well, both on the ground and in the air; and, although performance figures may not be quoted, it was obvious that the speed range of the "Pterodactyl V" is very great. The machine is of so unusual appearance that it is a matter of some difficulty to judge its speed, but there could be no doubt whatever that its landing speed was very low, while the top speed appeared to be nearly the same as that of comparable types of orthodox design.

With the behaviour of earlier "Pterodactyls" in mind I must confess that I went to Yeovil last week with a certain feeling of uneasiness when I thought of the ground performance. The short wheelbase of a "tailless" machine is apt to make taxiing a somewhat precarious proceeding. In the latest version we have a military machine of very high power and considerably greater weight than any "Pterodactyl" hitherto built, and if it is to be of any practical use such a machine must be able to operate from any makeshift aerodrome which war conditions will impose. A fairly strong wind was blowing when the machine



EX CATHEDRA: Capt. G. T. R. Hill explains the features of the new "Pterodactyl V." Note the balanced wing flaps and the auto slots. The rudders move outwards only. (*Flight* Photo.)





**CLEAN DESIGN:** Note the wheels in tandem and partly enclosed. The wing is thinned down in the centre to improve the view forward. (*Flight Photo.*)

was wheeled out, and hand-holds on the lower wing tips conjured up visions of running and perspiring helpers doing their level best to keep up with an aeroplane being taxied at a fairly good pace. Instead of which, when the engineers had run up the "Goshawk" to prevent it from shivering in the rather cold wind, Mr. H. J. Penrose, Westland's chief test pilot, calmly turned the machine side to wind and taxied off, later turning to the wind what would have been the tail if the machine had had one, until the far side of the aerodrome was reached. The machine was remarkably steady on the ground, and the undercarriage arrangement which has been evolved for it seems to answer very well. It consists of two main wheels in tandem, working on the bogey principle, of which the front one is steerable, while the rear one is provided with brakes. To support the wing tips two slightly complicated skids are used, each carrying a small wheel. These two skids not only

prevent the machine from leaning over laterally, but act also as tail wheels, there being no wheel or skid under the stern of the short central fuselage or *nacelle*.

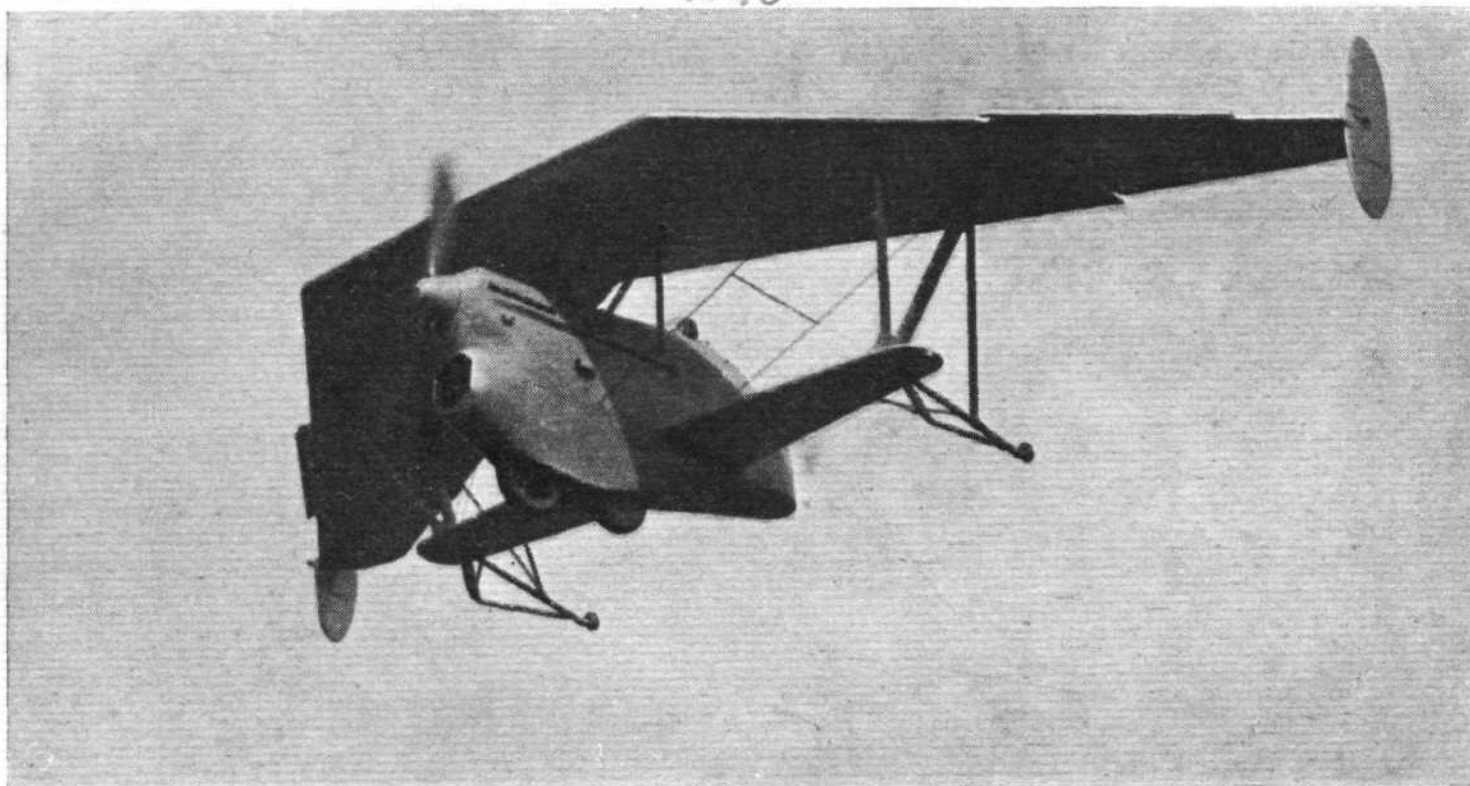
When it could be seen that Mr. Penrose had given his engine full throttle, one watched carefully for any tendency of the machine to give a landplane imitation of high-speed "porpoising." There was none. The springing of the main wheels must be very good. After quite a short run the machine left the ground, as near as one was able to judge, with all wheels simultaneously. It never got its tail up, or the equivalent in a "tailless" machine. (The introduction of these unorthodox aeroplanes plays havoc with the pleasant habit of using aeronautical slang under the impression that it is quite good English.)

During the next half-hour or so Mr. Penrose put the "Pterodactyl V" through its paces. I do not mean that he did loops and rolls, etc., but he flew past at high speed



**THE TEAM RESPONSIBLE FOR THE "PTERODACTYL V":** Mr. H. J. Penrose, test pilot; Sir Ernest Petter, chairman of the company; Capt. Hill, designer; Mr. Mettam, in charge of the stress department; and Capt. Keep, general manager. (*Flight Photo.*)

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**UNUSUAL PLAN FORM:** This is the first "Pterodactyl" to have a straight leading edge in the centre-section. The engine is a Rolls-Royce steam-cooled "Goshawk." (*Flight Photo.*)

and he flew past at low speed; he dived and he "zoomed"; he flew around in tight, steeply banked turns. His unpleasant experience over Martlesham the other day, when a wing of the machine he was flying broke off during a terminal velocity dive, and he had to depart per Irvin parachute, did not seem to have affected his nerve or even his nerves. Incidentally, the visit to Yeovil served to remind one what a very fine test pilot Mr. Penrose has turned out to be.

As the "Pterodactyl" was first dived towards the aerodrome, and then "zoomed" nearly vertically, it was impossible not to feel that here was a type of aircraft which, in addition to its advantages as a two-seater fighter, would be a formidable weapon for "strafing" objects on the ground. During the dive towards the ground the two machine-guns operated by the pilot could be brought to bear. After a rapid flattening out turned into a steep climb, the rear gunner could rake quite an area with his gun, the angle of climb giving him all the field of fire he could possibly want.

### Military Advantages

From a military point of view, the "Pterodactyl V" has an advantage over the orthodox aeroplane in that the rear gunner can cover practically the whole of the rearward hemisphere with his machine gun. The only obstructions toward the side are the wing-tip rudders. They are not of great area, and if an attacker were trying to "hide" behind one of them, he would be visible to the pilot, who would then only need to lift that wing tip to bring the other machine into full view and field of fire. Owing to the steep slope of the stern of the nacelle, the rear gunner can fire straight downwards while the machine is flying level, and a little manoeuvring by the pilot will quickly bring into view any object which may be in need of "spraying." Close team work by pilot and gunner is facilitated in the "Pterodactyl" by the fact that the two cockpits are very close together, although on slightly different levels. In this respect the machine should be as good as the old Bristol Fighter of the war period.

Aerodynamically and structurally it is a little more difficult to express an opinion of the "Pterodactyl V." The design avoids the drag of the tail, and the two main

undercarriage wheels are in tandem, and, moreover, almost entirely enclosed, so that their drag must be very low. Against that one has the two wing-tip skid structures, which look capable of producing quite an appreciable drag, and the "blister" under the front part of the nacelle, caused by the condenser. This might disappear if surface coolers were fitted. The upper wing is very thick over part of its span, although thin in the centre (to give the pilot a good view), and may be of slightly higher drag than the top wing of a normal biplane. On the other hand, the lower wing is diminutive in size, chord as well as thickness, and probably does not add a great deal of drag. On the whole, I think one would guess the "Pterodactyl V" to have about the same drag as that of an orthodox biplane of the same size and carrying the same load. If the weight is about the same as that of a comparable normal type, the performance should then also be about the same, with the extra advantage of the remarkable field of fire, which is unequalled in any normal two-seater, and only surpassed in a heavy night-bomber multi-seater with a gun position in the extreme stern.

Whether or not the structure weight of this machine is greater than that of the straight biplane I cannot say. The fact that the upper wing has a pronounced change of direction in its front spar should tend to make for extra weight, but the load distribution over a back-swept wing may be very peculiar, and may tend to relieve this load, or it may have the effect of aggravating it. Mr. H. A. Mettam, in charge of the stress department at Westlands, must have had an interesting time calculating the stresses. His mouth is, however, sealed for the present owing to the fact that the "Pterodactyl V" is still on the Air Ministry's Part Publication List, which stipulates that no mention may be made of the internal structure or of weights, etc.

Altogether, the Westland-Hill combination, as exemplified in the "Pterodactyl V," has produced something which should contribute a good deal, not only to the knowledge of aircraft design, but also to the military effectiveness of British aircraft. At a time when the expansion of the R.A.F. is beginning, this is something to be grateful for. New ground has been broken, and whether the experiment is a complete or only a qualified success can only be known after extensive tests. But it is good that the attempt should have been made.



# WHO'S WHO IN THE MACROBERTSON RACE

## Notes on Some of the Foreign Competitors

FROM what the minor prophets tell us, it would appear that the race is all over bar shouting; that Wiley Post has won by four controls, and will be half-way back to Oklahoma City before his nearest rival sights Singapore; that C. W. A. Scott has already transferred the £10,000 cheque from Melbourne to his No. 3 account in London; that Kingsford Smith has told the committee to omit the hyphen when engraving his name on the gold trophy; and that Mrs. Mollison is to toss Sir Macpherson double-or-quits and all-or-nothing for the five cash prizes in Speed and Handicap events. Quite too utterly ridiculous, of course; but the penalty of Fame.

Outside the spotlight are entrants, British and foreign, who have never been front-page news, whose everyday jaunts up and down the world's aerial highways leave no echo in the Street of Adventure, and to whom, as ordinary working pilots, the race offers but a brief change of scenery, a pleasant meeting with new peoples—white, black, brown and yellow—and a break in the monotony of routine flying jobs, to which they will return as soon as the tumult and shouting have died down—if not sooner.

Here are typical examples, chosen at random from the official list of entries:—

### Racing No. 22.—G. Lindow and M. Lindholm (Sweden)

This is to be a very sporting effort indeed. Georg Lindow and Marshall Lindholm are mail pilots in the service of *Aktiebolaget Svenska Aerotransport* (Swedish Air Lines, Ltd.). The company has consented to lend them the apple of its eye, a recently acquired Northrop "Delta."

Georg and Marshall have far more in common than the first syllable of their surnames. From boyhood they have been as Castor and Pollux. Georg, born at Malmö in 1902, is senior by one year. Fellow-graduates of Stockholm University, they served their seven years (or most of it) together in the same squadron of the Swedish Air Force, joined the mail service on the same day (in 1931) and batched together

Stockholm to London and back. Lindholm was born in Stockholm and lives at Malmö.

Both are tremendously keen about the race (as, indeed, is every member of the company's extensive organisation, from managing director Carl Florman and general manager Eriksson down to the youngest of the airport typists). Normally, Lindholm and Lindow smoke 40 cigarettes a day and take their glass of Swedish schnapps at mealtime. While training for the contest these amenities are forsworn. In off-duty hours, as opportunities occur, they will practice night-flights together in the "Delta," with non-stops from Malmö, across Denmark, Germany, Holland and the North Sea, to London and back, using only their blind-flying equipment. In the race they propose to maintain an altitude of 11,000 feet, and sustain themselves on a diet of cold chicken, bananas, bread-and-butter and water. Lindholm speaks perfect English; Lindow is stronger on German, but understands English if it is spoken slowly. Both are very agreeable companions and ideal hosts in their own country.

The third member of the Swedish team is Alfred Serander. He, too, is a graduate of Stockholm University and joined the air-line company in 1931. Previously, he served for several years in the Swedish Navy as W/T operator, in which capacity he will accompany Lindholm and Lindow.

### Racing No. 61.—F. Lombardi and V. Suster (Italy)

Major Francis Lombardi was born at Genoa on January 21, 1897, and lives at Vercelli. He joined the Italian Air Force in September, 1915, and took his certificate (Bleriot) the following August. After a year's service as instructor he went, at his own request, to No. 77 (Fighter) Squadron on the Isonzo and Piave fronts. In 21 combats, over a period of 480 fighting hours, he shot down 8 enemy aircraft and figured in a single-handed encounter with 25, one of which he bagged for himself. He carried out numerous photographic surveys and emerged from active service with four decorations. In 1919, he was appointed military commandant at Novi Ligure aerodrome and had the distinction of flying Benito Mussolini from there to Fiume and back. Discharged from the Air Force in 1920, he continued to fly his aircraft until 1922 when he returned to civil occupations.

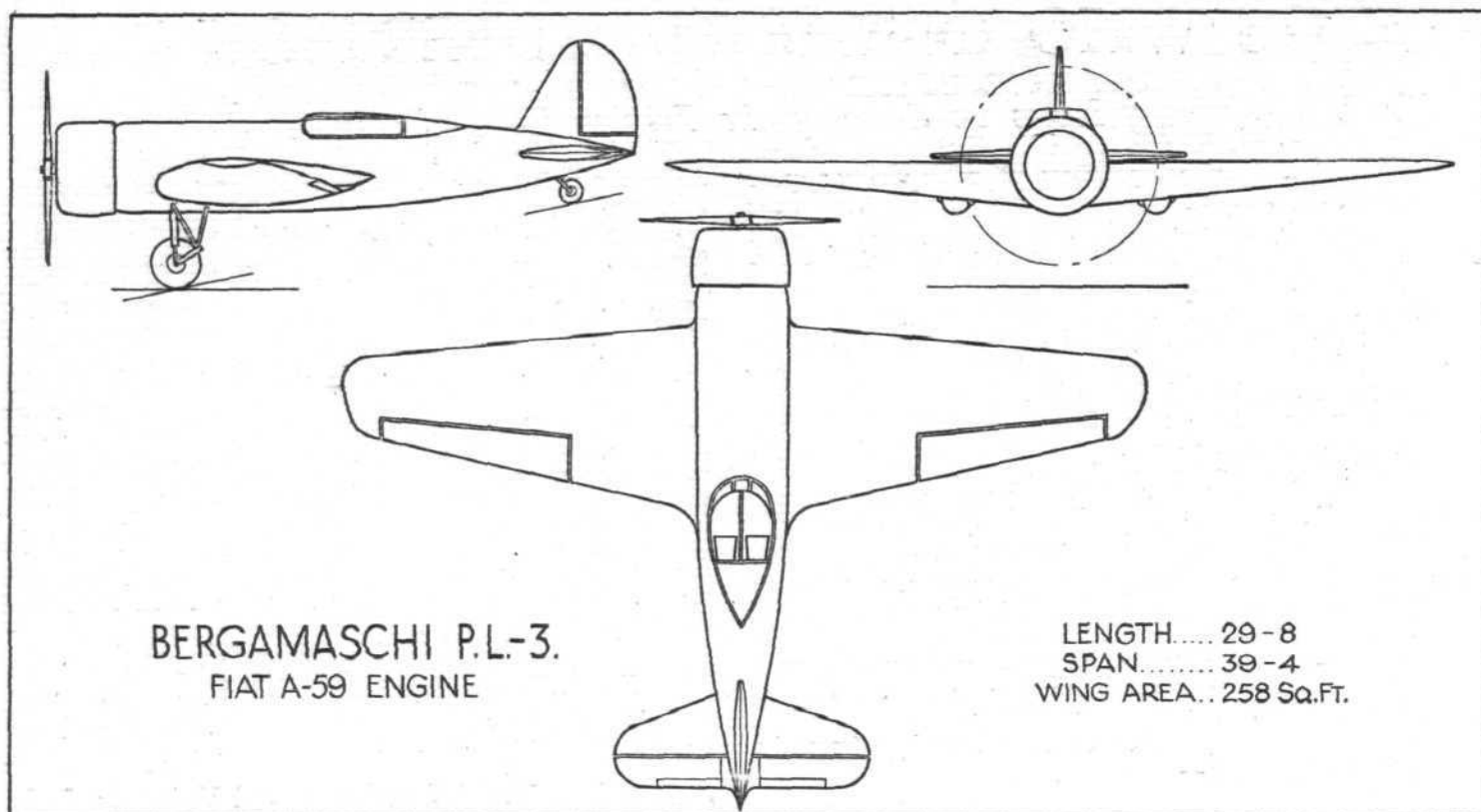


THE SWEDISH TEAM: The Northrop "Delta" *Halland*, and its crew, M. Lindholm (left) and G. Lindow.

until Georg's recent marriage to the daughter of General Lilliehöök, military commandant of Stockholm. His service ending a year before that of his comrade, Georg spent the interval flying an ambulance round Lapland, picking his patients off icebound mountain peaks and other unhandy places whenever the ambulance-call sounded through his W/T headphones. For this work, carried out over a total of 104,000 miles, in perpetual winter and often in pitch darkness, he was awarded a special decoration, accompanied by official recognition of "several ambulance flights successfully performed in most difficult circumstances." Day and night he has flown rather more than 300,000 miles, and Marshall only slightly less.

Marshall Lindholm's record differs from Georg Lindow's in that, although he did no ambulance work in Lapland, he flew his King and Queen and the Crown Prince and Princess from

In 1928, Major Lombardi founded the *Primo Gruppo di Turismo Aereo* at Vercelli. In August, 1929, flying an 85 h.p. Fiat AS1, he won the *Challenge International de Tourisme*. In February, 1930, in the same machine, he flew solo Rome to Mogadishu (Somaliland) 5,096 miles in 6 days 8 hours; this included a 23-hours' non-stop of 1,678 miles from Tobruk to Massowah. In July, 1930, with the same machine, he flew 7,763 miles from Vercelli to Tokio in 9 days 6 hours. In August, 1930, he competed in the Air Circuit of Italy, finishing fifth. At the end of 1930, in an 85 h.p. Fiat AS2, he flew from Rome to Capetown, round Africa, and back, a tour of 18,645 miles. In March, 1932, in a three-engined Caproni 101, he made a leisurely flight of 8,204 miles from Rome to Addis Ababa (Abyssinia) and back. Two months earlier he had flown from Rome to Tabora and back, 3,915 miles. In the same year he ran third in the aerial Circuit of Europe and



in 1933, third in the Austrian Alpine circuit. In 1934 (January 27-28), he made a not quite successful bid for the Rome-Buenos Aires record. After covering 4,475 miles in 44 hours, a forced landing at Fortaleza, Brazil, brought the effort to an end. It was made in a three-engined S71, with full commercial load and carrying a second pilot, engineer and W/T operator.



TO MAN THE P.L.-3: F. Lombardi and V. Suster.

Vittorio Suster, born at Trento on August 28, 1899, lives at Venice, on the Lido. He joined the Italian Air Force before attaining his 17th birthday, was twice wounded during the war, was with Gabriele d'Annunzio at Fiume and won four decorations for valour. He competed in the International Challenge in 1929 and 1932, and in the Circuit of Italy in 1931. Is a Cavalier of the Crown of Italy and, to quote his own words, "One of the first Fascisti." Of pleasing appearance (see photograph) and extremely polite, he heads his letters "Egregio Signore" and ends them "Distinti e cordiali saluti."

Vittorio's last seven years have been spent with the *Societa Aerea Mediterranea*, which operates a 3,823-mile system extending from Berlin and Vienna in the north to Tunis in the south and to Salonica and Sofia in the east, and which last year flew 1,168,213 miles, carrying 16,457 passengers and 298 tons of freight and mail. From August, 1927, until December, 1931, Suster was on the company's Adriatic service. Since then he has been chief pilot on the Rome to Central and Northern Europe services. He has flown more than 600,000 miles.

### The Bergamaschi P.L.-3

This Italian entry is a low-wing cantilever monoplane powered by a Fiat A-59 engine, which is the American Pratt & Whitney "Hornet," built under licence by the Italian company. The machine was designed by the well-known designer Cesare Pallavicino, who was at one time designer to the Italian

Breda firm and designed such well known types as the Breda 15, 19, 27 and 33. The construction of the Bergamaschi P.L.-3 is now nearing completion in the works of Cantieri Aeronautici Bergamaschi (C.A.B.) at Ponte San Pietro, Bergamo. The machine, as shown in the general arrangement drawings, is a low-wing cantilever monoplane with retractable undercarriage. It is of "mixed" construction in that the wing is built entirely of wood, with plywood covering, while the fuselage has a rectangular-section primary structure of welded chrome molybdenum steel, covered with curved panels to bring it up to a circular section, the panels in front being of aluminium sheet, while those on the aft portion are of plywood.

The retractable undercarriage is operated by worm and wheel gear, and an indicator shows the position of the wheels. There are four petrol tanks, with a total capacity of 440 gallons, two tanks in the wings and two in the fuselage. It is estimated that they should give the machine a range of about 2,500 miles at a cruising speed of approximately 200 m.p.h., but these figures are estimates only and subject to confirmation by actual flying trials. The tare weight of the P.L.-3 is 3,300lb., and the disposable load is 4,056lb., giving a total loaded weight of 7,356lb. As the wing area is 258 sq. ft., the wing loading is just under 29lb./sq. ft. The ratio of gross to tare weight is exceptionally high (2.23), so much so that it makes one rather doubt that the machine can possibly conform to the I.C.A.N. requirements when loaded up to this weight. It seems more likely that the tare weight will turn out to be greater.

(To be continued next week.)

### Latest Race News

Sanction has been given by the Air Council for the new R.A.F. aerodrome at Mildenhall, Suffolk, to be used as the base for the start of the race. Competitors may use the station from early in October. The approximate dimensions of the aerodrome are 1,400 yards by 1,100 yards, with a maximum run of about 1,600 yards.

The following withdrawals are announced by the Royal Aero Club: No. 13, André Gucit; No. 24, W. Courtenay; No. 25, Wedell Williams Air Service Corp.; No. 40, C. C. Goertz; and No. 59, A. S. Butler.

The insurance pool which has been formed to deal with the peculiar problems of insurance for the participants in the race, and which includes all the leading underwriters and insurance interests which handle aviation risks, is able to quote cover on the following terms: For aircraft up to a value of £1,000 the premium is 20 per cent., over £1,000 and up to £10,000, 15 per cent., and over £10,000, 10 per cent. One-third of the premium paid to individual competitors will be returned if no claim is registered. For the pilots themselves cover can be obtained for death only at 8 per cent., and for death, disability and personal accident, at 10 per cent., no return premium being made on this form of cover.



# PRIVATE FLYING

A SECTION FOR OWNER-PILOTS  
AND CLUB MEMBERS

THOSE who have been responsible for our postal services have not until recently shown themselves to be very convinced of the possibilities of air transport. It is therefore with considerable interest and satisfaction that one learns that an experiment has been decided upon which may open up a new era in the usefulness of aircraft. It is understood that the aim is to discover whether it is feasible to utilise the Autogiro for the purpose of collecting from and delivering mails on the roof of the General Post Office at Mount Pleasant.

## Mails and the Autogiro

ALTHOUGH great progress has been made with the Autogiro, the time has not yet come when it could land on and take off from such a base without considerable alteration to the roof, and the proposed experiment will therefore involve the picking up and dropping of the mails whilst in flight. There is no reason to suppose that such a method is impractical, as the Autogiro is practically capable of hovering over its objective. Such a manoeuvre would certainly not be possible with any other type of machine at present available, and the fact that this experiment has been decided upon is a great tribute to those who have brought the Autogiro to the present stage of efficiency. The recognition of its possibilities, not only by the Post Office but by the authorities at Scotland Yard, is an indication that both Departments are in the hands of people of imagination and initiative, and all those who have the interests of aviation at heart will welcome the enterprise that is being shown in these official quarters.

Many of us have long pressed for the development of a central air port in London, and this should be nearer realisation if enthusiasm for the air continues to be the policy of the heads of these two powerful departments. Plans for an air port near the centre of the metropolis are further advanced than is generally realised, and there are at least three schemes on which a great deal of initial work has been done. In each case, however, the plans envisage accommodation for the landing and taking off of aircraft of conventional fixed wing design. For this reason the expenditure involved is very high, and such a project will need the exercise of a far-seeing policy if it is to be brought to fruition in the immediate future.

The advent of the Autogiro and the potentiality of its future development opens up a more immediate possibility of the construction of facilities on a less ambitious scale, and the success of the Post Office experiment will be a great encouragement. This will not be without its influence on the person who is only prevented from becoming an enthusiastic aircraft owner by lack of means. The increased utilisation of the rotary-winged type of machine promises to inaugurate a period of cheaper machines within the reach of a greater section of the public.

Whilst on the subject of the Autogiro I cannot pass without mentioning the great faith which has been shown in this type since the earliest days by Air Com. J. G. Weir. He has not only encouraged its inventor, Senor

de la Cierva, by continuous personal support, but has always been a most enthusiastic user of the machine.

I have had the pleasure again of visiting the Air Commodore's home at Skeldon, Ayrshire, during the past two week-ends, where he has a private aerodrome and a well-built hangar which houses several machines. Whilst it is possible to land and take off in an aeroplane, it requires considerable care. With the Autogiro, however, it is perfectly safe to do so in whatever direction the wind happens to be.

My visit to Skeldon was interesting for more than one reason, for whilst there I met two men who, in their several spheres, have played an enormous part in the history of aviation—Lord Weir (who is Air Com. Weir's brother) and Lord Trenchard. Lord Weir, who was one of the pioneers of aviation, will be remembered as the second Minister for Air, and previously did a great deal to organise our Air Technical Services during the War. Lord Trenchard's services to the Nation during the War, and since, will never be forgotten, and in his latest rôle as Chief Commissioner of Police he still

shows his faith in aviation, which is undoubtedly destined to play a great part in the future of his Department.

## Air Signs for Bad Weather Flying

THE study of meteorology is not only a fascinating subject in itself, but essential for the air pilot who habitually uses his aircraft for long cross-country journeys. Those not well versed in this knowledge should take particular care to obtain weather reports from reliable stations before setting out on such flights, as a good deal of inconvenience, if not worse, can be met with by running into bad weather in districts where landing places are not very suitable.

However good one's navigation is, it is always a source of satisfaction to be able to check up one's position by a ground landmark. Having neglected to take the precaution of obtaining a weather forecast, which I seldom omit, on a recent flight which took me through the Midlands, I ran into a thick patch which made it difficult to determine my bearings. The industrial centres in this district are not readily distinguishable one from another, and I wished that Municipalities generally were more alive to the great benefit they could confer on airmen, at no great cost, by suitably marking their towns by air signs. In this instance, I was lucky enough to be able to check my whereabouts by catching sight of the sign painted on the top of a gasometer at Leamington. In flying from London to Liverpool, although I kept a good look-out, this was the only air sign I saw which a pilot could readily distinguish in such circumstances.

For the guidance of Municipal Authorities, I might mention that a memorandum on standard air signs has been prepared by the Automobile Association and issued by the Civil Aviation Section of the London Chamber of Commerce. The scheme embodied in this memorandum has the approval of the Air Ministry and of the Royal Aero Club, and would be a great help to air pilots.

## NOTES

by

LORD SEMPILL

A.F.C., F.R.Ae.S.

Private Flying**FROM THE CLUBS***Events and Activity at the Clubs and Schools***MIDLAND**

A total of 41 hr. 50 min. was flown during last week at Castle Bromwich, in spite of showers and strong winds that, at intervals, stopped flying.

**READING**

The newest of the Miles "Hawks" to be put into service at the Phillips and Powis School of Flying has complete night-flying equipment, and on several nights during the last fortnight it has been kept busy by enthusiastic members.

The Reading Aero Club is, weather permitting, holding what will probably be the last dawn patrol of the season on Sunday, September 9, between 8 and 8.30 a.m.

**NORTHAMPTONSHIRE**

Flying times for the past week have totalled twenty-five hours, and Lt. Col. A. R. Liddell completed all tests for his "A" licence on his sixty-second birthday.

The "Noon Patrol" was quite a success, and the aerodrome was successfully defended against an attacking force of twenty-five machines. In the afternoon an American tennis tournament was held, which was won by Messrs. Pain and Brassart. Visitors were also entertained by aerobatic displays, given by Mr. Philip Symington in a Comper "Swift," and by Flt. Lt. T. Rose in Captain Shaw's Miles "Hawk."

**BROOKLANDS**

Between line squalls, the hours this week have amounted to 60 hours dual and 45 solo.

On August 26 several members entered for the Hart Trophy, which took the form of a landing competition, the objective being the circle on the aerodrome. The winner, Mr. G. F. Hall, scored a bulls-eye every time, which was an exceptionally fine show, as he only went solo this year, after the small amount of 3½ hours dual. Mr. N. Seth made a good second, and Mr. Bremridge third. The Shipwright Trophy was also competed for, by way of a short cross-country competition. This was won by Mr. W. Holbeach, who pin-pointed his exact position on the map.

**WALSALL**

Five new members have joined the Walsall Club during the week, and a first solo made by Mr. B. J. Dawkins.

**CAMBRIDGE**

Two new members, Messrs. Panes and Branston, joined Marshall's School during the week, and several trial lessons were given to prospective members. Among the cross-country navigation flights made was one to St. Inglevert, France.

Flying times for the month of August were well above those flown during the same period of last year.

**BALDONNEL**

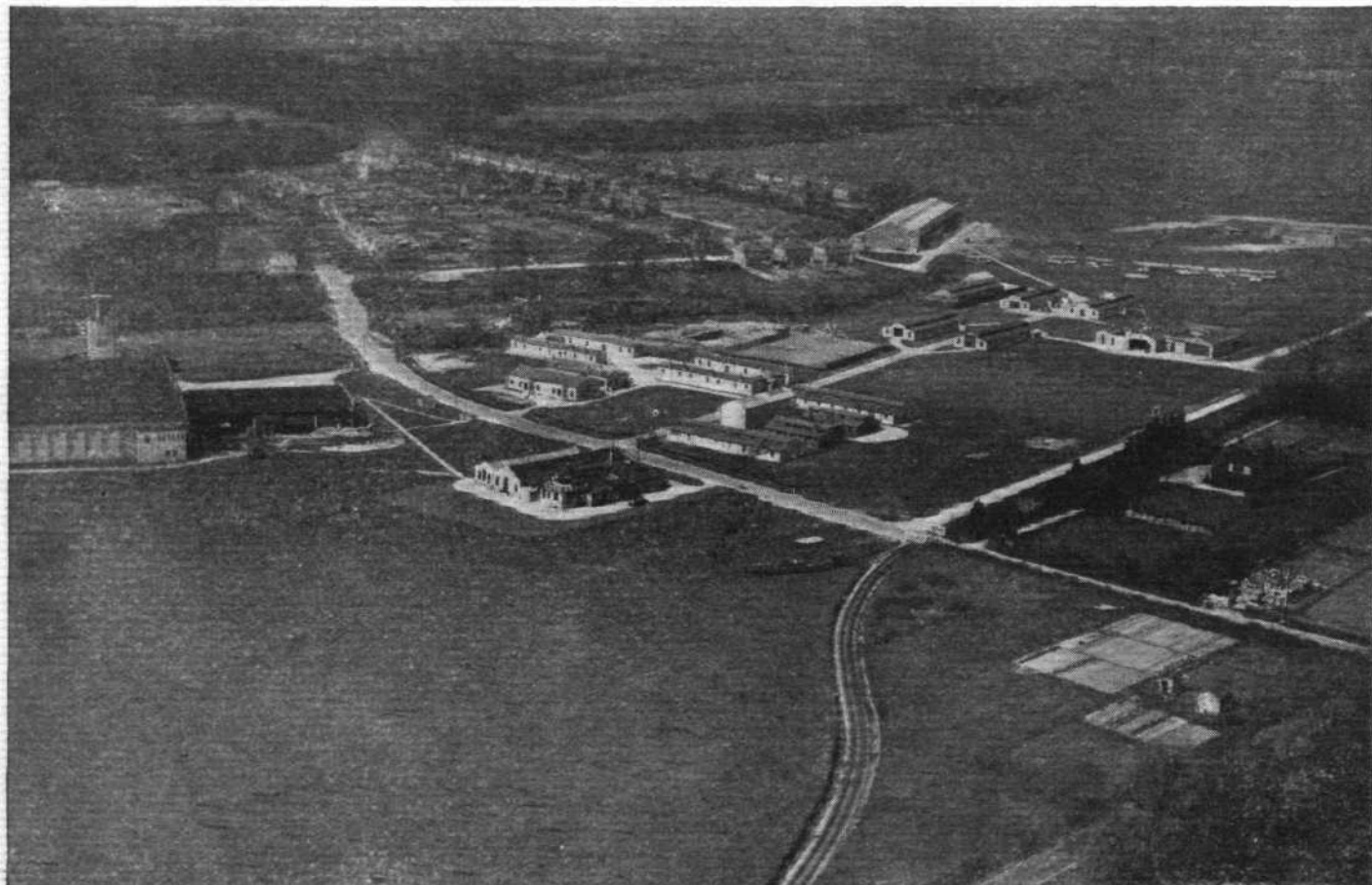
Flying time at the Irish Aero Club for the month of August totalled 75 hours. Mr. C. F. French, the chief instructor, has now been appointed secretary of the club, but, despite his many duties, he carried out a number of important charter flights last week. One "A" licence was obtained during the month.

**WITNEY AND OXFORD**

During last week a total of 28 hours was flown by pupils of the Witney and Oxford Aero Club, with one first solo by E. B. Taylor, and one "A" licence by Mr. C. L. Harrison.

At a children's party held last Friday there were, among others, competitions for judging height and speed, and a number of children made their first flight. Mr. E. M. H. Slade gave an excellent demonstration of flying.

Witney aerodrome, incidentally, though on the small side, is, consequently, ideal for training purposes. Before pupils are allowed to go solo they must not only make five perfect "three-pointers" with Chief Instructor Slade, but must also make five perfect right-angle approaches. A soloist, therefore, can be considered to have a very fair chance of pulling off a forced landing from the moment that he is allowed in the air alone. There is no question of making an approach, such as can be done at a large aerodrome, with a safe margin of several hundred feet of error.



**OLD AND NEW:** An unusual view of the A.S.T. buildings and aerodrome at Hamble. In the foreground is the old Avro aerodrome, which runs down to Southampton Water, with the A.S.T. administrative buildings on the same side of the road. (Flight Photo.)



**KARACHI**

During July the Karachi Aero Club put in twenty-one hours of night flying—a record for an Indian club. Three pilots were trained *ab initio*, and a fourth completed his "B" licence night flying tests. Karachi airport, of course, is equipped with a 10 kw. "shadow bar" floodlight and a luminous landing tee for night work.

**HERTS AND ESSEX**

The "Mollison" Challenge Cup for aerobatics, held on Sunday, August 26, was won by V. A. Ercolani, with K. J. Lindy second, and G. H. L. Curtis third.

The "Aerofête" is to be held on Saturday, September 15, at 3 p.m. All visiting aircraft will be welcome, and there will be a short handicap race for visitors.

Chief Instructor Roger Frogley (Miles "Hawk") was second in the Folkestone Trophy race at Lympne. E. L. Gay (Miles "Hawk") was disqualified by an apparent error of one of the point-observers.

**MADRAS**

At the annual meeting of the Madras Flying Club, Ltd., the chairman, in the course of his speech, referred to the insecurity of the Indian subsidy and the fact that, if flying clubs are to continue to function in India, ways and means must be discovered for carrying on entirely independent of Government help.

In order to develop the Club's earning power the committee has lately given a great deal of attention to public joy-riding in outlying districts of the Presidency. An additional "Puss Moth" has been purchased, and one of the pilots is always on tour. The results have been very encouraging. But the income from joy-riding may tend to fall off as public interest is satisfied, and it is possible that more attention will have to be paid to remunerative taxi work for business purposes. The Club has two "Puss Moths," which are available for charter

flights, and three pilot instructors are at present employed.

There has been an increase of 200 hours in the instructional flying.

**CORK**

Miss Ruth Hallinan, of Fermoy, is the first lady member of the Cork Aero Club to obtain her "A" licence, but another lady pupil is expected to qualify this week. The club is now seeking to obtain from the Department of Industry and Commerce an aerodrome licence for a field on the Cork-Kinsale road, about two miles from the city.

**HATFIELD**

The flying time for the week at the London Aeroplane Club was 74 hr. 45 min., of which over 46 hours were put up during one week-end. Several cross-country flights were made, including trips to Boston Newington and to Clacton.

Prince Ulrich Kinsky, of Austria, who has been a keen devotee of flying for many years, visited Hatfield during the week on his new "Leopard Moth," bringing another pilot to collect his "Puss Moth," which had been in at the D.H. Service Department for overhaul. He left on Friday for Vienna and Warsaw.

**NORFOLK AND NORWICH**

The boys attending the Public School Aviation Camp on the aerodrome made considerable progress last week, two of them completing their tests for their licences, and three more making very successful first solos.

The club had another good week's flying, compiling nearly fifty hours.

The competition for the President's Trophy, which took place a few weeks ago, resulted in a tie between Mr. Alan Colman and F/O. A. J. S. Morris. It has been decided to fly this tie off again over another course set by the instructor, and the performances of these two pilots will be judged by Flt. Lt. J. Homer.

**The Zagreb Meeting**

The Royal Aero Club has been informed by the Aero Club of Yugoslavia that the Zagreb meeting fixed for September 8 and 9 has been postponed until next year.

**A Midland Gliding Club**

Enthusiasts in Birmingham, one of whom is Mr. C. E. Hardwick, retiring Chairman of the British Gliding Association and a sailplane owner, is about to start a new Midland Gliding Club. There will be a training ground near Birmingham, and a soaring site on the Long Mynd, near Church Stretton. The slope there faces the prevailing wind, and local features make it eminently suitable. All communications should be sent to Mr. Theo Testar, at 80, Gibson Road, Handsworth, Birmingham, 20.

**Bad Luck at Sutton Bank**

The nine-days' National Gliding Meeting at Sutton Bank, near Thirsk, is not passing without incident. Mr. MacClement stalled the "Willow Wren" sailplane, but was not seriously injured, and Dr. A. McGlashan missed the landing ground with the "Tern" and hit a tree.

However, Mr. G. E. Collins has flown from Sutton Bank to Osmotherley and back, covering some 28 miles on Monday.

**An East African Rally**

On September 29 the Aero Club of East Africa will be holding an Air Rally at Nairobi, similar to that which was held last year. There will be all the usual events, as well as some interesting racing, and the day will conclude with a "sundowner" dance. Visiting pilots are invited to become honorary members of the club during their stay in Nairobi.

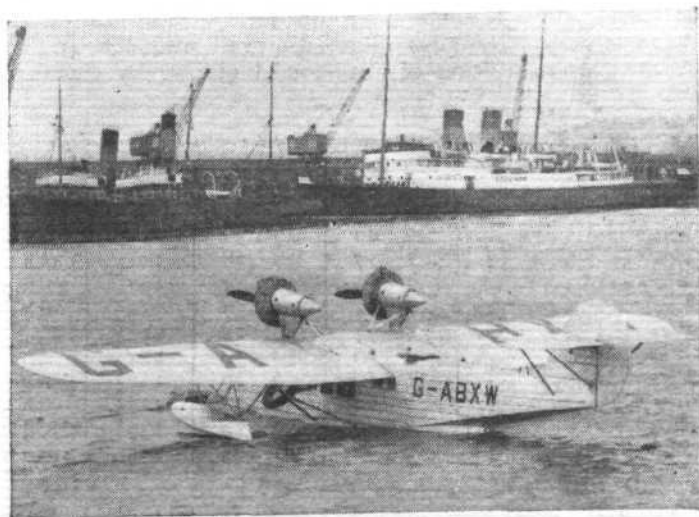
**A Club for Lancaster**

A new flying club has been formed at Lancaster, called the Lancaster, Morecambe and District Aero Club. Mr. A. Langton is the chairman and Mr. W. Manley the secretary. The club have leased a large area of the Middleton Sands, which will be used as an aerodrome. In a field adjoining the sands a club house is being erected, and also hangarage for the machines. Mr. S. A. Thorn has been instrumental in getting the club going, and has taken an Avro "Cadet" over from Manchester, where he is Henly's representative, to the club's aerodrome on several occasions.

**Ownership**

The present ownership figures, as provided by Lloyd's and the British Corporation Register, are as follows:—

	Total.
Private .....	560
Agents .....	68
Constructors .....	131
Clubs .....	93
Others (non-classified) .....	3
Business (other than aviation) .....	37
Aerial Work .....	4
Taxis, School and Joy-riding .....	304
Imperial Airways, Ltd. ....	38
National Flying Services, Ltd. ....	12
	<hr/>
	1,251



**IN ST. HELIER HARBOUR:** Last week a Saro "Cloud" belonging to Spartan Air Lines arrived at Jersey and was moored in London Bay. There are rumours that an inter-Channel Island mail service may be started soon, and various important personages have been seen in Jersey.

# INTERNATIONAL MEETING AT LYMPNE

*Five countries were represented at this meeting, with a total of over one hundred visitors who arrived by air for a two-day stay at Lympne*

**A**LTHOUGH nearly four years old, a "Cirrus III"-engined "Moth" belonging to three members of the Cinque Ports Flying Club, was hotted up to average over 100 m.p.h. and win both the races at the International Flying Meeting held at Lympne last Sunday. This machine was the joint property of Messrs. J. G. Brown, G. B. Fellowes and T. S. Webb. Mr. Brown flew it to victory in the Folkestone Aero Trophy Race and Mr. Fellowes flew with equal success in the Cinque Ports Wakefield Cup Race.

Both races were over three laps of a course which kept the machines within sight of the aerodrome throughout the total distance of 50 miles. The handicapping was in the able hands of Capt. Dancy and Mr. Rowarth, and our tables show what an excellent job they made of it.



Mr. J. G. Brown (left), winner of the Folkestone Aero Trophy Race; Mr. G. B. Fellowes, winner of the Cinque Ports Wakefield Cup Race; and M. Dupont, a visitor from Belgium, who won the arrival competition. (Flight Photos.)

The meeting was organised by the club, whose manager is Mr. W. E. Davis, and a large number of pilots from



Sir Philip Sassoon presenting the Folkestone Aero Trophy to Mr. J. G. Brown. On the right are Mr. and Mrs. W. E. Davis, whose management spelt success for the meeting. (Flight Photo.)

abroad were invited. Many of these were prevented by bad weather on the Continent from arriving at Lympne. A sufficient number to give the occasion an International aspect, however, arrived on Saturday, the first day of the meeting, and attended the club dance in the evening. The weather played havoc with the heats of the two races which were run off on that day; Mr. Henshaw, flying the "Gipsy Major"-engined Comper "Swift," had his face cut by the hail which also perforated the wings of Sir Charles Rose's "Hawk," and interfered with the carburation of his "Gipsy Six" engine; other competitors found great difficulty owing to the heavy rain and hail accompanying the thunderstorms which circled round the aerodrome most of the afternoon on Saturday. Sunday was fine, however, and the finals were run off under admirable conditions.

The programme, which was varied each day, included aerobatics by Flt.-Lt. G. Stainforth in an Avro "Tutor," fitted for inverted flying—as usual, "George" flew in a smooth and effective manner whether he was doing an inverted spin or steep upward roll, he was just as at home on his back as the correct way up; demonstrations of the Monospar "S.T.10" by Capt. R. Stocken and the British Klemm "Eagle" by Mr. E. G. Hordern; parachute descents by Miss Heron-Maxwell and Mr. A. W. Fairlie; an exhibition of auto-towed gliding by members

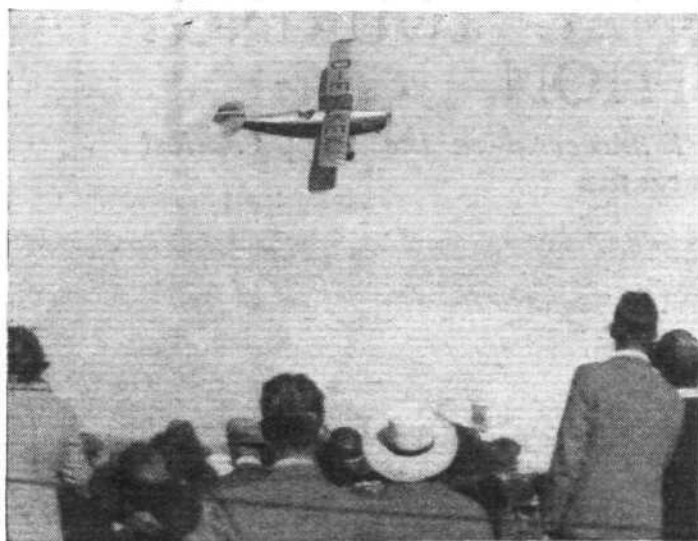
## FOLKESTONE AERO TROPHY—FINALS.

Markings.	Entrant.	Pilot.	Aircraft and Engine.	Start.	Finish.	Av.Speed.	Place.
				min. sec.	min. sec.	m.p.h.	
G-AAMU	J. G. Brown .. ..	Entrant ..	Moth (Cirrus III) ..	0 00	29 38	101½	1st
G-ABOG	C.P.F.C., Lympne ..	Ken Waller ..	Moth (Gipsy I) ..	1 17	30 38	102½	6th
G-AAYL	Mrs. E. Battye .. ..	Entrant ..	Moth (Gipsy I) ..	1 44	31 44	100	10th
G-ACNR	K.K.Brown .. ..	Entrant ..	Moth (Gipsy Maj.) ..	4 04	30 39	112¾	7th
G-ACTO	Herts and Essex Aero Club	R. Frogley ..	Hawk (Cirrus III) ..	4 04	30 14	114½	2nd
G-ACSA	R. Norwood .. ..	Entrant ..	Moth (Gipsy Maj.) ..	4 19	30 36	114	4th
G-ACIZ	Mrs. G. M. Patterson ..	Entrant ..	Hawk (Cirrus III) ..	5 16	30 49	117½	8th
G-ABVW	L. Lipton .. ..	Entrant ..	Moth (Gipsy III) ..	7 06	30 37	127½	5th
G-ACRG	British Klemm Co., Ltd. ..	E. G. Hordern	Eagle (Gipsy Maj.) ..	8 30	30 28	136½	3rd
G-ACOO	F. Cameron .. ..	Entrant ..	Leopard Moth (Gipsy Maj.)	9 22	31 35	135	9th

## CINQUE PORTS. WAKEFIELD CUP—FINAL.

G-AAMU	G. B. Fellows .. ..	Entrant ..	Moth (Cirrus III) ..	0 00	29 51	100½	1st
G-ABXZ	E. F. Walter .. ..	Entrant ..	Moth (Gipsy I) ..	1 18	31 07	100¾	6th
G-ACSA	R. Norwood .. ..	Entrant ..	Moth (Gipsy Maj.) ..	3 44	29 56	114½	2nd
G-ACIZ	A. L. Patterson .. ..	Entrant ..	Hawk (Cirrus III) ..	5 26	31 10	116½	7th
G-AAVT	C. S. Napier .. ..	Entrant ..	Hendy 302 (Hermes IV) ..	7 55	30 07	135	3rd
G-ABWW	A. H. Cook .. ..	A. Henshaw ..	Swift (Gipsy Maj.) ..	11 27	30 09	160½	4th
G-ACTE	Sir Charles Rose .. ..	Entrant ..	Hawk (Gipsy Six) ..	13 15	30 38	172½	5th





Herr Stein demonstrating his Adler (80 h.p. Hirth). Five of these machines came over for the meeting. (Flight Photo.)

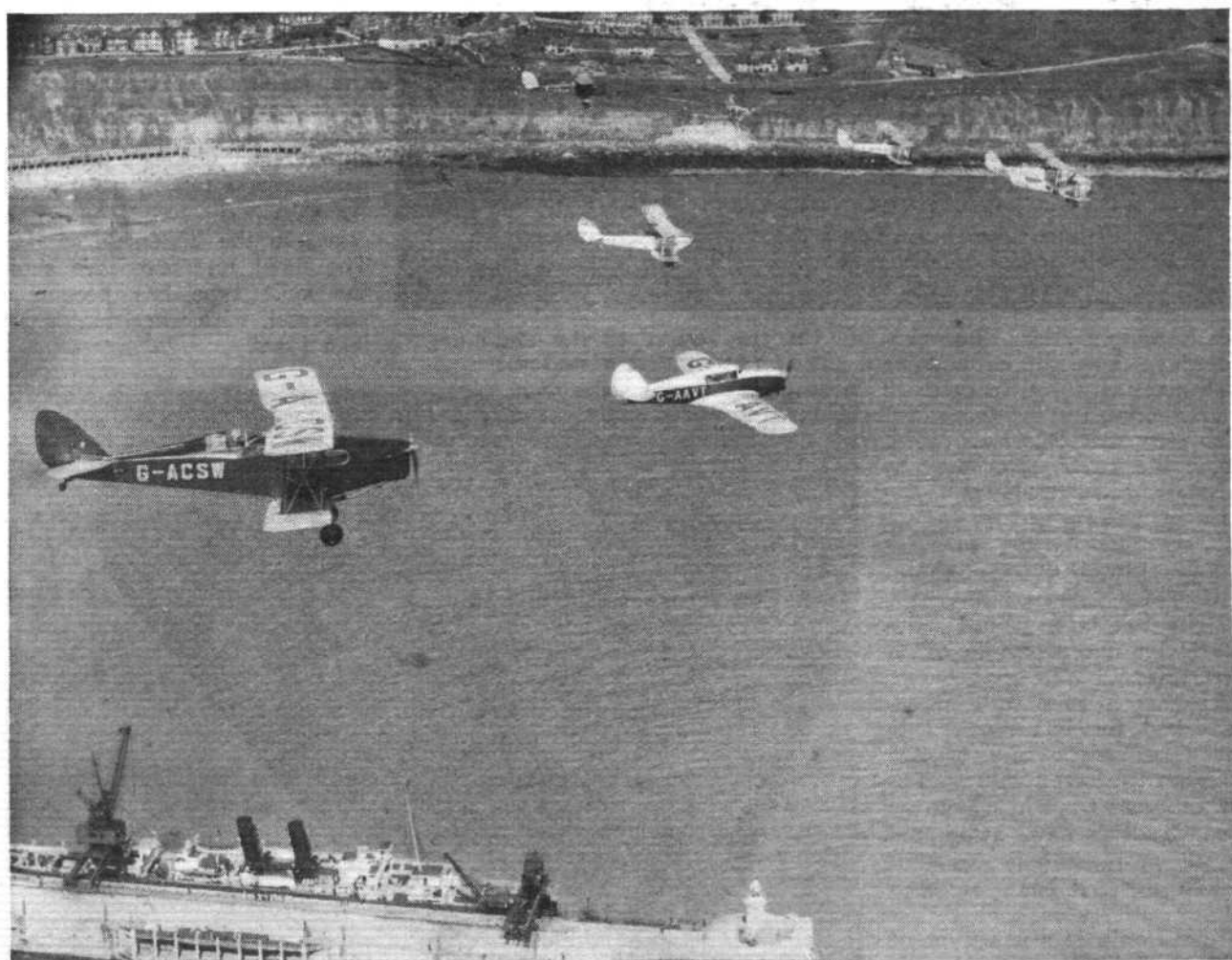


Mr. Sluyter flew crazily, running along the ground on one wheel, dropping to the ground in an almost stalled condition and demonstrating the "handability" of his Pander (Siddeley "Genet"). (Flight Photo.)

of the Channel Gliding Club; aerobatics by Mr. G. Lowdell on a Hawker "Tomtit" with the Wolsley A.R.9 engine—Mr. Lowdell being the test pilot for the Wolsley firm; formation flying by Club pilots; a demonstration of the "Hawk Major" by Mr. C. Powis; and last, but by no means least, a demonstration by Herr Stein, one of the German pilots who so kindly came over for the meeting, in a Gerner-Adler, a small welded steel tube machine with the Hirth 80 h.p. engine, and crazy flying by Mr. N. W. Sluyter, Chief Instructor to the Dutch National Flying School, in a "Pander" (Siddeley "Genet").

The meeting was certainly a success and the club members under the direction of Mr. Davis should feel satisfied with the effectiveness of the organisation they achieved as a result of months of extremely hard work. This was the second International meeting held at Lympne, and if its growth continues at the present rate it bids fair to become one of the most important meetings of the year. The value of an international meeting like this is impossible to over-estimate. It enhances that spirit of comradeship which exists between flying men of different countries and repays to a small extent the lavish hospitality which British pilots abroad always receive; for this the Cinque Ports Club deserve our gratitude.

C. N. C.



An impromptu formation composed largely of visiting aeroplanes, flying over Folkestone Harbour. Capt. Max Findlay's "Fox Moth," seen in the foreground, took up passengers throughout the meeting. (Flight Photo.)

# THE INTERNATIONAL TOURING COMPETITION

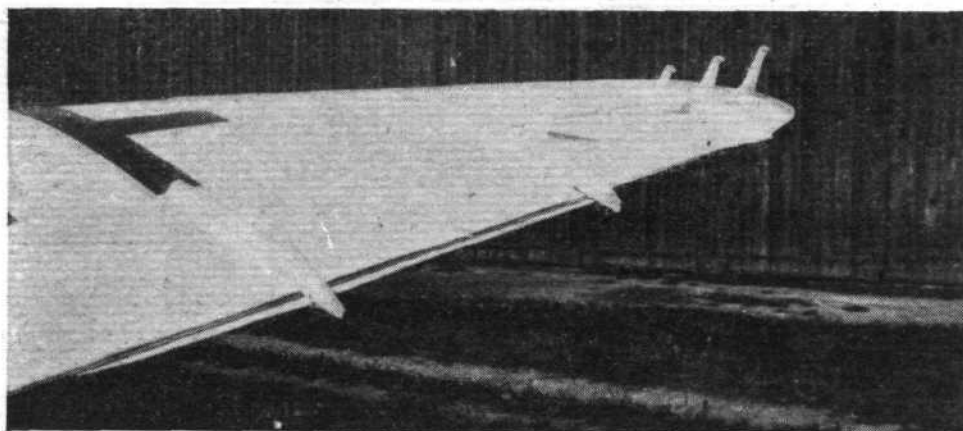
*Slotted and flapped wings are almost universal in the 1934 Contest*

By FRITZ WITTEKIND

**W**ARSZAWA, August 30, 1934.—Of the forty-eight aeroplanes originally entered only thirty-four have arrived in Warsaw.

The problems with which designers were confronted this year were by no means easy. For a tare weight which must not exceed 560 kg. (1,233 lb.) they had to produce three- or four-seater cabin machines which, on the one hand, had to attain maximum speeds of 250 to 300 km/h (155-186 m.p.h.), and the landing speed of which, on the other hand, must not exceed 60 km/h (37 m.p.h.).

A number of constructors have managed to do this, but undoubtedly it was difficult, and weighing of the machines has shown that many have

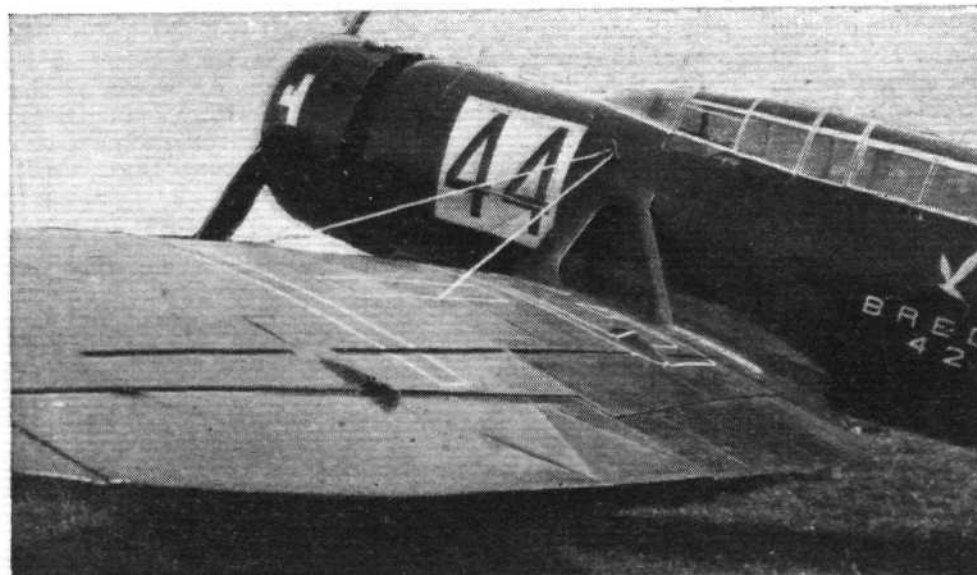


The Fieseler Fi.-97 has a Fowler variable wing.

in which the slats are operated automatically by the air-flow over them. Interesting also is the wing of the new Fieseler Fi-97. This is based upon the Fowler system, and provides variable area and variable camber.

Quite a new system had been introduced by Herr Messerschmitt in the BFW-108. In this wing it was originally intended to have no ailerons at all, but at the last moment ailerons were adopted.

Considerable improvements are to be found in the undercarriages. Only the Italian Bergamaschi PS-1 and the German BFW-108 have retractile undercarriages. In the Italian machine the wheels are withdrawn backwards, while in the German they are raised sideways and go into recesses in the underside of the wing. The fixed undercarriages show that the split type has become almost universal, with wheel brakes and balloon tyres.



On the Breda 42 the slots are automatic in action.

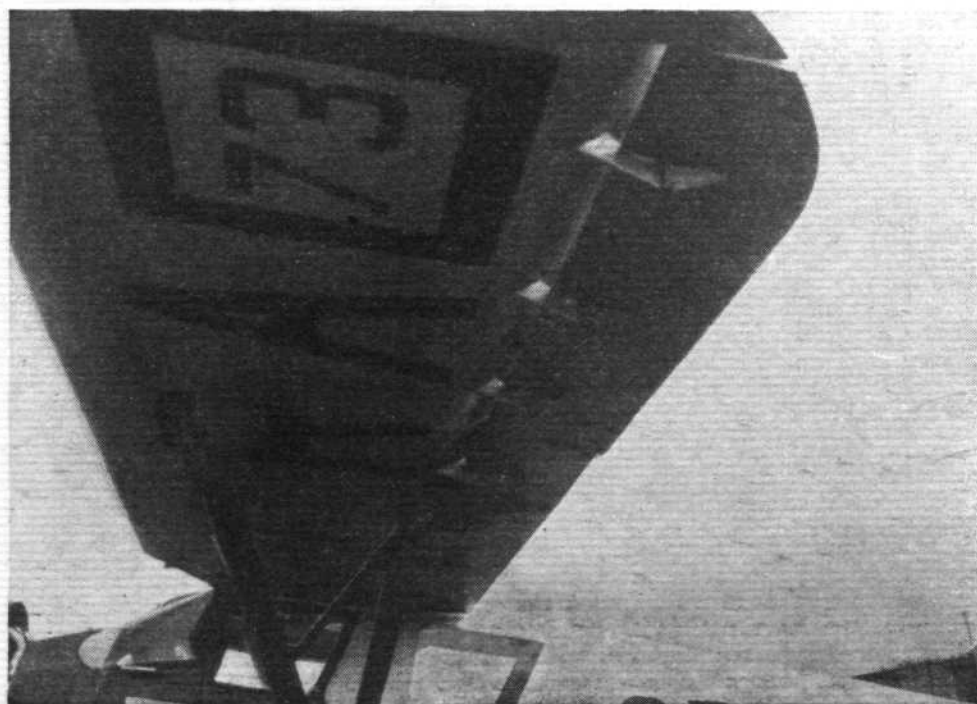
exceeded the weight limit. The German machines particularly had to remove all sorts of things in order to get the weight down.

It is obvious that this removal of things from the machines in order to get the weight down results in losing a number of points which will be awarded according to the so-called discretionary classification for equipment. It can be argued that too much weight has been placed upon these points for equipment in drawing-up the rules.

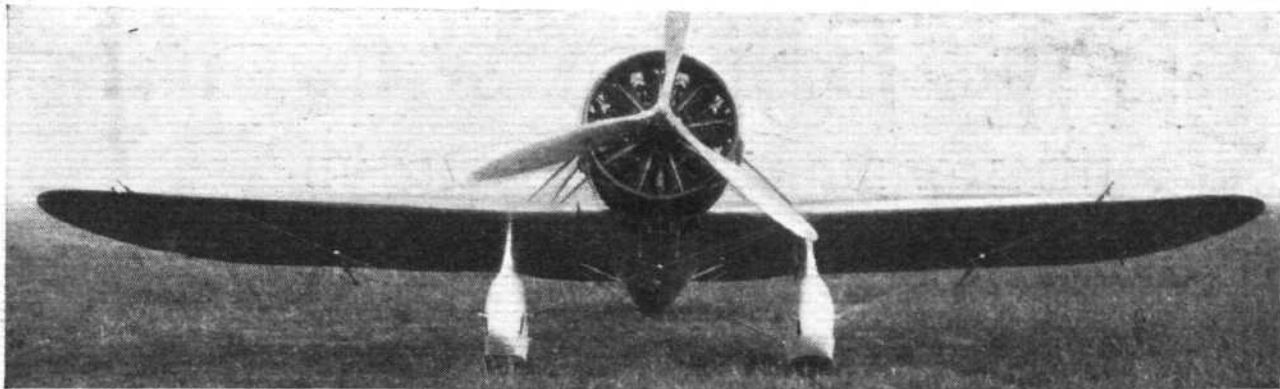
The fact that a very wide speed-range is asked for has resulted in nearly all the competitors turning their attention to slotted wings. The variety of different ways in which the various constructors have attempted to solve the problem indicates that nothing like finality has yet been reached.

In the new Breda 42 a new type of slotted-wing construction is employed,

**A POLISH DEFENDER:** The RWD 9 has slotted flaps.







## THE BREDA 27

*An Italian Monoplane Fighter with an Alfa-Romeo "Mercurius" IV Engine,  
Which is a Bristol "Mercury" IV Built under Licence in Italy*

**M**ORE and more military monoplanes are appearing in almost every country which has an Air Force. One of the latest of these is an Italian machine, the Breda 27 single-seater fighter. It will be seen that the aircraft is of ultra-modern design, bearing quite a remarkable resemblance to certain American types. Not that it can be said that the machine is in any way a "copy" of these aircraft, the wire-braced wings with the centre-section struts transmitting loads from a well-faired wire-braced undercarriage having featured in many Breda designs during the past few years.

The fuselage is constructed of welded chrome molybdenum steel tubes with wire bracing. Rear and central portions are covered with duralumin, but the forward covering behind the engine is of aluminium. Welded carbon-steel tubes are used for the engine mounting, which is detachable and fixed to the fuselage by six bolts. The central part of the fuselage is built integral with the wing "stubs," to which are attached the undercarriage legs.

A medium thick section is used for the wing, the structure of which comprises wooden spars and ribs, the covering being of plywood. Spar fittings, which may be easily inspected through cellon doors, are of steel, the attachments of the spars to the fuselage being provided with two bolts. Ailerons, which are aerodynamically balanced, are of wooden construction, plywood covered and joined to the wings by steel hinges. It is claimed that in the case of damage to any one of the wing spars the strength of the wing is reduced by one-third at the most.

Wood is mainly used for the tail surfaces, the covering being of plywood, and all levers, hinges and attachments of steel. The tail plane, which is in one piece, is adjustable in flight, and is braced on its upper side by streamlined tie-rods and beneath by two streamlined steel tubes. A portion of the fin may be adjusted on the ground for directional trimming.

The undercarriage structure is of steel, directly welded to the framework which forms the central part of both fuselage and wing unit. It consists of two separate members which serve for the attachment of the tie-rods which brace the wing. The shock absorbers are of the long travel oleo-pneumatic type. Large streamlined fairings, easily detachable for inspection of the working parts of the undercarriage, are fitted over



**BREDA 27**  
**Alfa-Romeo "Mercurius" IV**

DIMENSIONS			
Span	...	...	35ft. 1in. (10.7 m)
Length	...	...	24ft. 10in. (7.6 m)
Height	...	...	11ft. 1in. (3.4 m)
Mean chord	...	...	5ft. 8in. (1.77 m)
Wing area	...	...	202.9 sq. ft. (18.85 m <sup>2</sup> )
WEIGHTS AND LOADINGS			
Weight empty	...	...	2,777.8 lb. (1 260 kg)
Gross weight	...	...	3,946.2 lb. (1 790 kg)
PERFORMANCE			
Maximum speed (approx.)	...	...	236 m.p.h. (380 km/h)
Minimum speed (approx.)	...	...	62 m.p.h. (100 km/h)
Climb to 16,400ft. (5 000 m)	...	...	8 min.
Ceiling	...	...	29,528ft. (9 000 m)

the wheels and shock absorbers. Wheel brakes are provided. Either a tail skid or a tail wheel may be used, the skid being of a wide spoon-shaped type.

The pilot's control column is adjustable for height, both on the ground and during flight. Control transmission is through double steel cables over pulleys, and levers. On the left of the pilot's seat, is the tailplane incidence adjuster, and on the right-hand side are the controls for adjusting the pilot's seat and the wheel brake levers.

Petrol is carried in tanks within the wings, feed being maintained by engine-driven pumps through appropriate filters. Parts of the tubing which are subjected to vibration are of Petroflex. The oil tank is situated behind the engine, and is provided with a Vickers type cooler, easily accessible filling cap, and a level indicator.

Armament consists of two Breda Safat 7.7 mm. calibre machine guns mounted in the fuselage and synchronised to fire through the airscrew arc. The cocking levers for the guns are directly in front of the pilot, well within his reach, and the firing levers are on the top of the control column. Beneath the guns are the cartridge boxes, each containing 400 rounds of ammunition, the receptacles for the disintegrated links of the belt and bags for the empty cartridge cases. Cartridge boxes and guns are easily accessible through doors in the fuselage. A type O.M.1 camera using 13 x 18 cm. films is placed on the right side of the fuselage. Near the centre of the port wing are fittings for the installation of a camera gun which is provided with controls similar to those used for a normal pilot's machine gun.

Complete wireless equipment is carried. Incorporated in the lighting system is a retractable landing light beneath the fuselage. Three navigation lights and three lamps for lighting the instrument panel are provided. The back of the pilot's seat is made to accommodate a Salvator B "dorsal" type parachute. Oxygen apparatus, fire extinguisher of the "knockout" type and heating arrangements complete the equipment.

**AN ITALIAN FIGHTER : A Bristol "Mercury" IV built under licence in Italy gives the Breda 27 a speed of 236 m.p.h.**

# THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

## New Use for Autogiro

An Autogiro has been chartered to attack the bracken pest on a stretch of moorland near Castle Semple, Renfrewshire. A tank holding 30 gallons of solution of sulphuric acid is fitted beneath the rotors, the solution being released from a spray beside the tail skid. It is not yet known if the experiment has proved successful.

## Grierson Gets There

Mr. John Grierson, who has been engaged in a flight from England to Canada via the Arctic Air Route, has reached his destination. It will be remembered he set out from Rochester on July 21 in a D.H. "Fox Moth" seaplane ("Gipsy Major"), and after reaching Reykjavik, Iceland, he damaged his machine on taking off for Greenland, and he had to return by boat to England for new parts. Grierson resumed his journey on August 22, and after leaving Godthaab on August 27 was reported missing for a short time. He eventually reached Povungnituk, Hudson Bay, on August 28. Next day he proceeded to East Main, Quebec, and arrived at Ottawa on the afternoon of August 30. He carried a number of letters from

Greenland and Hudson Bay Co.'s outposts and from exiled "mounties."

## Twenty-five Years Ago

From "Flight" of September 4, 1909

"Brooklands for Flyers: It seems almost a natural corollary that amongst the sporting members of the Brooklands Automobile Racing Club there should be a number of men whose minds are turning to the fascination of aviation. Several, in fact, are already on the road to become future flyers, some four getting near the stage of making trials before long. Mr. Hammond has had his machine in hand on the ground for some little time now, and others who may be heard of shortly have arranged for Bleriot and Antoinette flyers. For trial purposes the Brooklands grounds should be useful, and as progress is made it should be possible to arrange some extended flights round the 'bowl.'"

## Graf Zeppelin's Passengers

The number of passengers conveyed by the *Graf Zeppelin* on its trips from Europe to South America and back has increased by 50 per cent. this year.

## Relieved by Air

A Soviet airman has relieved a woman meteorologist and her assistant, who have for two years been making meteorological studies on the remote Kamenev Island in the Arctic Ocean.

## French Air Manœuvres

A series of aerial manœuvres to test the air defences of Paris against surprise attack from the air commenced on August 28. The first day was marred by an accident to a Breguet 413 biplane, the pilot and observer being killed. Numerous attacks were made on Le Bourget during the two-days' operations, with, it is reported, considerable success for the attackers. Other attacks were made on the railway stations at Châlons-sur-Marne, Vitry-le-François, Reims, Troyes, and Mourmelon, while the defending forces made heavy bombing attacks on Metz, Toul, Nancy, Luxeuil, and other "open towns."



**PUZZLE, FIND THE AIRCRAFT:** A fine view of Folkestone taken by our photographer from Mr. W. E. Davis' "Leopard Moth," which was flown by Mr. J. G. Brown, Chief Instructor to the Cinque Ports Flying Club. It is particularly interesting to note how difficult it is to see the six aeroplanes which are flying across the photograph. (*Flight* Photo.)





**WHAT FRANCE IS BUYING:** The Dewoitine D-500 fighter (Hispano-Suiza 12 x hrs 690 h.p. engine) which has been adopted by France as a standard military type. The very latest versions of the machine attain speeds round the 260 m.p.h. mark. A description, drawings and performance table of the D-500 were published in *Flight* of March 15, 1934.

### Aeroplanes v. Immigrants

Palestine coastguards are reported by an Arab newspaper to be using aeroplanes and searchlights to stop the illegal landing of immigrants.

### Flt. Lt. McIntyre Engaged

The engagement is announced of Flt. Lt. McIntyre, A.A.F., who took part in the Houston Everest Expedition, to Miss Marjorie Potts.

### Japanese Air Exercises

Air defence manoeuvres, the principal object of which was to train civilians to co-operate with military and naval authorities in the event of an air attack, were successfully held in the Tokyo and Yokohama districts recently.

### The American World Flight

Mr. John Leight (spelt "Light" in last week's issue), who is making a world flight, landed at Reykjavik on August 31 from Angmagssalik. On September 3, Mr. Leight left for the Orkney Islands, but returned to Iceland.

### Atcherley's Aerial Equitation

Flt. Lt. R. L. R. ("Batchy") Atcherley, dressed in frock coat and bowler hat, amused a crowd which had waited for hours in drenching rain at the National Air Races at Cleveland by bringing out a Curtiss machine, putting a saddle astride the fuselage, and "riding" round the aerodrome, never more than twenty feet above the ground.

### An Avro for the Viceroy

A four-engined version of the Avro 642 (described in *Flight* of April 5, 1934) is being built at Manchester for the Viceroy of India, to take the place of the Avro 10, in which Lord Willingdon has travelled extensively. The engines will

be Armstrong Siddeley "Lynx," and are expected to give the machine a maximum speed of 150 m.p.h., an economical cruising speed of 127 m.p.h., and a range of more than 535 miles.

### Sir Ofori Atta Flies

Sir Nana Ofori Atta, paramount chief of Akim Abuakwa State, Gold Coast, made his first flight at Abridge on August 27. He was highly delighted with the experience. The machine was flown by Col. Julian.

### Exploring Brazil by Zeppelin

There is a possibility that the new Zeppelin L.129, now being constructed at Friedrichshafen, may explore the

primeval forests of Brazil, under the command of Dr. Eckener. Dr. Eckener says that he would need a base in Rio de Janeiro, and that this would mean that he would have to wait until the new hangar is completed next August.

### Across in Ten Hours

Col. Roscoe Turner flew in violent gales from Los Angeles to New York in ten hours. He had nothing to eat the whole way. Col. Turner is to fly a Boeing 247-D machine in the MacRobertson race.

### Kingsford-Smith Flying to England

It is reported that Sir Charles Kingsford-Smith is about to attempt (if he has not already started) to beat the Australia-England record in the Lockheed "Altair" which he has entered for the England-Australia Race. He will be accompanied by Capt. P. G. Taylor, who will be his co-pilot in the big race.

### Killed After Beating Record

After breaking the world's land plane speed record with a speed of 306.215 m.p.h., Mr. Douglas Davis crashed, and was killed, during the Thompson Speed Trophy Race at the National Air Races being held at Cleveland. It seems that the crash was caused by Mr. Davis, whose body was found eight miles from the course, losing control of the machine when cornering. His speed will not be recognised as a record, as it does not exceed the previous record of 304.98 m.p.h. by the 4.97 m.p.h. required by the National Aeronautic Association of America.



**FOR ENGLAND-AUSTRALIA RECORD?** Sir Charles Kingsford-Smith's Lockheed "Altair," which he has entered for the MacRobertson Race, being shipped to Australia. It is reported that "Smithy" is about to attempt to beat the Australia-England record on this machine.

## Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list.

Aug. 28-Sept. 16. International Touring Competition, Poland.

Sept. 1-9. National Soaring Competition, Sutton Bank.

Sept. 8. Midland Aero Club "At Home."

Sept. 15. Herts and Essex "Aerofête" at Broxbourne.

Sept. 16. Reading Aero Club "At Home."

Sept. 22. Norfolk and Norwich Aero Club Garden Party Norwich.

Sept. 29. Leicestershire Aero Club "At Home."

Oct. 6. London to Cardiff Air Race and Cardiff Ae.C. Garden Party.

Oct. 7. Aviation Golf Meeting, Royal Porthcawl Golf Club Porthcawl.

Oct. 20. England-Australia Race for MacRobertson Prize.

Nov. 16-Dec. 2. 14th International Aviation Exhibition, Grand Palais des Champs-Elysees, Paris.

# THE ROYAL AIR FORCE



## Service Notes and News

## Air Ministry Announcements

### THE FLEET AIR ARM

One of the two new flights for the Fleet Air Arm which are to be formed during the current financial year will be known as No. 408 Flight. It will provide "Ospreys" for the cruisers *Ajax*, *Arethusa*, and *Galatea*, all of which have been launched during the past six months.

### C.I.G.S. TO TOUR IN A "ROTA"

Gen. Sir Archibald Montgomery-Massingberd, Chief of the Imperial General Staff, is about to undertake a tour of inspection of Army units. On September 15 he will visit a Territorial Infantry Brigade at Porthcawl, and will travel there from Salisbury Plain by "Rota" autogiro. He made use of an autogiro on one of his tours last year.

### CRASH INTO A GRID CABLE

F/O. J. G. Bigelow, of No. 29 (Fighter) Squadron, was seriously injured on September 3 when his "Bulldog" hit a cable of the grid near a pylon at Ham Street, Ashford, Kent. His flight were flying in formation, taking part in Army manoeuvres, when the accident occurred. Soldiers extricated the pilot from the wreckage, and he was sent to Shorncliffe military hospital.

### AIR COMMODORE HASKINS

Air Com. F. K. Haskins, D.S.C., has been placed on the retired list at his own request. He entered the Royal Navy in 1905 and learnt to fly in 1913. He was present at the Heligoland action in H.M.S. *Lurcher*. From 1915 to 1917 he served as a flight lieutenant in the R.N.A.S., and for his gallantry was awarded the Distinguished Service Cross, the Croix de Guerre, and was made a Chevalier of the Legion of Honour.

### COMBINED OPERATIONS

Our contemporary, the *Army, Navy, and Air Force Gazette*, holds that the need is now urgent for equalising the promotion in all three Services, as commanders and staff for combined operations must be selected. "It will not do," writes our contemporary "as is proposed for the combined operations at Hull, to have three commanders and avoid the issue by calling them 'directors,' because only one man can act as commander, and he must have a combined staff to help him. It would simplify the problem of choice if the senior officer could normally take charge, and if he were normally of about the same age and had had sufficient experience of the other Services to entitle him to command them. At present it might quite easily happen that the senior commander might be by ten years the younger and have no such experience, even so far as his own Service is concerned."

The senior officers of the Royal Air Force have practically all been drawn from either Army or Navy, and so have experience of other Services, but they have reached high rank at a much earlier age than is normally possible in the Army or Navy, and may easily be now senior to experienced officers of the other Services under whom they formerly served.

### AMERICAN AIR STRENGTH

Mr. Clark Howell, chairman of the U.S. Federal Aviation Commission, is reported to have said in an interview that the air strength of the United States was 1,800 war machines, which would probably be increased to 2,000. With the manufacturing facilities of the country it could be brought up to 5,000 machines in three months. He declared himself a believer in an international air force.

### ROYAL AUSTRALIAN AIR FORCE

Australian papers report that catapults are to be installed in the cruisers of the Royal Australian Navy, and possibly also on the seaplane carrier *Albatross* (which is now in reserve) for

launching the new "Seagull 5" amphibians, of which 24 have been ordered from the Submarine (Vickers) firm. It is hoped that six of these will be delivered by the end of the present year or early in 1935, when they will be tested in Australian conditions. If any modifications appear desirable as the result of these tests, they can be incorporated in the remaining 18 machines.

Eighteen Hawker "Demons" are also on order for the Royal Australian Air Force, and it is hoped that at least six of these will have arrived and been tested in Australia in time to give a display when H.R.H. the Duke of Gloucester pays his visit to the Commonwealth. The fighter which is being supplanted in the R.A.A.F. by the "Demon" is the "Bulldog." The general-purpose aeroplane in the Service is the "Wapiti." Two wooden "Southamptons" are also on charge.

### ROYAL NEW ZEALAND AIR FORCE

Eight Vickers "Vildebeests" have been ordered for the use of the Royal New Zealand Air Force, and it is hoped that at least four of them will reach Auckland before the end of the year. In preparation for their arrival extensive improvements are to be carried out at the Hobsonville aerodrome with the object of providing a better surface and a longer runway. Unemployed labour will be used for this work, as is the regular custom in New Zealand, and it is estimated that some £10,000 will be distributed in wages. In addition, a new plot of ground of 28 acres has been acquired on which a new hangar measuring about 150 ft. by 150 ft. will be erected, together with housing for the officers and men stationed at the aerodrome. It is obvious that New Zealand is now taking air defence quite seriously, and is determined to live up to the title "Royal" recently conferred by the King upon her Air Force.

### R.A.F. BASE IN IRAQ

The R.A.F. base at Sin Dhibhan, some 60 miles west of Baghdad, has now assumed the definite shape of a newly planned city, and construction is proceeding apace. The fencing round the area is now almost completed. Workmen are busy at different points and already some of the buildings have been finished. All thoroughfares in the future R.A.F. cantonment are now ready for asphaltting.

It will be recalled in this connection that the treaty between the United Kingdom and Iraq provides for the grant to the British Government of a site for an air base in the region west of the Euphrates to which air forces now maintained at Hinaidi and Mosul shall be withdrawn. The treaty also provides for the maintenance of the R.A.F. base (Shaibah) in the vicinity of Basra.

### FRENCH AIR MANŒUVRES.

French air manoeuvres were held last week on an extensive scale. Paris was represented by Le Bourget aerodrome, which was heavily attacked. The attacks were held to have been mainly successful.

### R.A.F. COLLEGE, CRANWELL

The following flight cadets successfully completed on July 27, 1934, their course of training at the Royal Air Force College. The names are arranged in alphabetical order:—Ashton, N. D., Ashton P. W. (Winner of Sword of Honour), Beck, H. D., Burrough, R. J., Charlton-Jones, C., Clayton, G. A. V., Cornabe, K. E., Curry, R. E., Hackforth, P. D. W., Hards, A. F., Hobbs, H. J., Hughes, W. A., Jeurwine, J. R., Kirk, J. E., Lister, R. C. F. (Winner of R. M. Groves Memorial Prize), Lowe, J. H., MacDonell, A. R. D., Manson, T. R., Molyneux, H., Riddell, P. J. A. (Winner of Air Ministry Prize for Humanistic Subjects), Saward, D., Spurrier, A. F., Stokes, D. G. (Winner of Abdy Gerrard Fellowes Memorial Prize and J. A. Chance Memorial Prize), Vielle, E. E., Williams, D. W., Wright, C. L. Y., and Yaxley, R. G. (Winner of Air Ministry Prize for Aeronautical Engineering).



FABRIC WORKERS

It has been decided to effect certain amendments to establishments in the trade of fabric worker which will follow the broad lines that—

- (i) one fabric worker is allowed for each station on a "one-single-engined squadron" basis,
- (ii) two fabric workers are allowed for each station on a "two single-engined squadron" basis,
- (iii) three fabric workers are allowed for each station on a "two twin-engined squadron" basis.

Where this scale involves an increase to the present establishment, the reduction of an equivalent number of aircrafthands will be made. The increase in fabric workers has been sanctioned to enable the recovering of fabric parts to be more extensively performed in units, and thus to reduce the incidence of such work upon the depots. In addition, the responsibilities of the trade will be extended to include the maintenance and repair of parachutes.

CONSOLIDATION OF OFFICERS' PAY

His Majesty's Government have decided that, with effect from September 1, 1934, officers' pay, half-pay scale A, service retired pay, and service element of disability retired pay, shall be consolidated at rates corresponding to a cost-of-living index figure of 55, which represents a reduction of 9½ per cent. from standard rates.

It is at the same time announced that, until the state of the national finances permits of the issue of the full consolidated rates referred to in this order, the present current rates will continue in issue as now.

The consolidated rates of full pay and half-pay scale A which will ultimately be operative are given in the appended table.

Pay

Rank.	Consolidated Daily Rate.
GENERAL DUTIES BRANCH.	
Acting pilot officer	£ s. d. 0 11 10
Pilot officer	0 14 6
Flying officer	0 18 2
" after 2 years in the substantive rank	1 0 10
Flight lieutenant	1 3 6
" after 2 years in the substantive rank	1 5 4
Squadron leader	1 10 10
" after 5 years in the substantive rank	1 12 6
Wing commander	1 16 2
" after 1 year in the substantive rank	1 17 2
" 2 years	1 18 0
" 3	1 18 10
" 4	1 19 10
" 5	2 0 8
" 6	2 1 8
" 7	2 2 6
" 8	2 3 6
" 9	2 4 4
" 10	2 5 4
Group captain	2 9 10
" after 2 years in the substantive rank	2 12 6
" 4	2 15 2
" 6	2 18 0
Air commodore	2 18 4
Air vice-marshal	4 10 6
Air marshal	5 8 8
Air chief marshal	6 6 8

COMMISSIONED ENGINEER, SIGNALS AND ARMAMENT OFFICERS

Flying Officer J. E. Atkins has been transferred from the stores branch as a commissioned engineer officer.

The undermentioned warrant officers have also been granted permanent commissions:—(i) As commissioned engineer officers: C. W. Baker, M.B.E., V. J. Casey, F. W. H. Gee, H. E. Newing, P. McDiarmid, A.F.M., and H. Hipwood. (ii) As commissioned signal officers: J. R. Welsh, A.F.M., R. K. Nicholas. (iii) As commissioned armament officer: R. B. Cleaver.

CARPENTERS, RIGGER, AND RIGGERS, AERO

Airmen of the trades of carpenter, rigger, and rigger, aero., undergoing courses of instruction in metal rigging at the School of Technical Training (Men), Manston, will, in future, be examined in the normal way by the Central Trade Test Board.

Two courses of instruction for carpenters, rigger, and riggers, aero., in metal rigging are held at the School of Technical Training (Men), Manston, namely:—

- (i) A short course of 16 weeks' duration.
- (ii) A continuation course, also of 16 weeks' duration.

The short course is intended to teach airmen the foundations of metal rigging and to enable them to carry out with confidence repairs to metal aircraft under fully skilled supervision, either at once or after gaining practical knowledge by working subsequently in their units.

The purpose of the continuation course is to afford to airmen who are unable to remuster after the short course a further opportunity to remuster to metal rigger.

VACANCIES FOR APPRENTICE CLERKS

The Air Ministry announces:—Vacancies exist in the Royal Air Force for well-educated boys (in possession of an approved first school certificate) between the age of 15½ and 17 years 3 months to enter as apprentice clerks in October and January next. Entry will be by selection from among applicants with the necessary educational qualifications. Preference may be given to candidates who will have attained the age of 16 years. Detailed information regarding the apprentice clerk scheme can be obtained from the Secretary, Air Ministry (Apprentice Clerks Department), Gwydyr House, Whitehall, London, S.W.1. Successful candidates will be required to complete twelve years' regular air force service after reaching the age of 18. At the age of 30 they will normally return to civil life but a limited number may, subject to service requirements, be permitted to re-engage to complete twenty-four years' service qualifying for pension. Boys entered under this scheme will normally receive eighteen months' training in clerical duties, typewriting, practical office routine, shorthand (for Clerks, General Duties), pay and store accounting (for Clerks, Accounting). During this period their general education will be continued under a staff of graduate teachers. An apprentice clerk at present receives pay at the rate of 1s. a day for the first year and 1s. 6d. a day afterwards, i.e., until he has both attained the age of eighteen and successfully completed the course. Thereafter pay is at present issuable at rates commencing at from 3s. to 4s. 6d. a day (21s. to 31s. 6d. a week) according to the degree of success achieved at the final examination. In addition, free board and lodgings and an allowance for uniform are provided.

ROYAL AIR FORCE GAZETTE

London Gazette, August 28, 1934

General Duties Branch

The follg. are granted short service commissions as Pilot Officers for five years on the active list with effect from and with seny. of Aug. 14:—A. F. Bandidt, O. H. D. Blomfield, J. W. McGuire, K. J. McKay.

Flt. Lt. R. J. Montgomery-Moore is granted the acting rank of Squad. Ldr. whilst employed as British Liaison Officer, Beirut (July 23); Air Commodore F. K. Haskins, D.S.C., is placed on the retired list at his own request (July 17); Flt. Lt. F. H. Ronksley, M.C., is placed on the retired list (Aug. 26).

Dental Branch

Flt. Lt. G. A. Ballantyne, D.F.C., L.D.S., is promoted to the rank of Squad. Ldr. (Aug. 28).

ROYAL AIR FORCE RESERVE

Reserve of Air Force Officers  
General Duties Branch

The follg. are granted commissions as Pilot Officers on probation in class AA (ii) (Aug. 13):—K. L. Ashfold, N. W. Burnett, J. T. Cain, H. L. Cruickshank, G. J. D. Dale, D. W. Donaldson, J. S. Hall, F. C. Hopcroft, M. Horan, L. A. Howard, J. F. Inkster, P. H. Lewis, H. F. Morley, K. T. Murray, P. E. Rees, J. L. J. Rowland, E. Sprawson, W. H. M. Walker, G. Watson, R. M. Wilkinson, J. D. Wood.

The follg. Pilot Officers on probation are confirmed in rank (Aug. 14):—H. Arnold, R. A. Atkinson, B. Ball, R. G. T. Cooke, R. B. Crow, S. C. Elworthy, C. N. Kirkus, P. V. Mackinnon, C. E. Madge, R. T. S. Norwood, K. G. Seth-Smith, F. E. A. Talbot, L. M. S. Whetham.

F/O. S. M. M. Watson is transferred from class AA (ii) to class C (Aug. 12); F/O. S. H. White relinquishes his commission on completion of service (Aug. 16).

ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

General Duties Branch

**Squadron Leader.**—C. Chapman, D.S.C., to No. 29 (F) Squadron, North Weald, 24.8.34. To command vice Sqd. Ldr. J. H. Butler.

**Flight Lieutenants.**—C. E. H. Allen, D.F.C., to No. 142 (B) Squadron, Netheravon, 22.8.34. W. G. H. Ewing, to Headquarters, Western Area, Andover, 22.8.34. H. D. McGregor, to Headquarters, Coastal Area, Lee-on-Solent, 22.8.34. H. J. Walker, to No. 503 (Co. of Lincoln) (B) Squadron, Waddington, 22.8.34. C. W. Weedon, to No. 111 (F) Squadron, Northolt, 22.8.34. H. G. Wisher, to No. 15 (B) Squadron, Abingdon, 22.8.34. T. G. Bird, to Headquarters,

Inland Area, Stanmore, 27.8.34. J. S. Harrison, to No. 22 Group Headquarters, South Farnborough, 22.8.34. A. H. Simmonds, to R.A.F. Depot, Uxbridge, 24.8.34. G. G. Walker, M.C., to R.A.F. Depot, Uxbridge, 20.8.34.

**Flying Officers.**—A. F. Ander-on, to No. 13 (A.C.) Squadron, Netheravon, 26.8.34. A. A. N. Malik, to No. 2 (A.C.) Squadron, Manston, 26.8.34. R. P. Pakeham, to No. 26 (A.C.) Squadron, 26.8.34.

Accountant Branch

**Flight Lieutenant.**—C. E. Aston, to R.A.F. Record Office, Ruislip 22.8.34.

# COMMERCIAL AVIATION

## — AIRLINES — AIRPORTS —

### ULSTER'S FIRST AIRPORT

*The Governor of Northern Ireland Officially Opens Airwork's Latest Venture, an Aerodrome on Lord Londonderry's Estate Near Newtownards*



**ARDS OPENING:** The scene in front of the clubhouse a few minutes before the Governor of Northern Ireland officially opened the airport. Lord Londonderry is at the microphone and *Finian the White* is on the left.

**N**EVER has Ulster's interest in the development of aviation been more noticeable than at the opening of Ards Airport last Friday. Fifteen thousand people must have gathered at the aerodrome for the ceremony and for the short display during the afternoon.

Lord Londonderry, before asking the Duke of Abercorn to declare the airport open, explained that during the next year, when the buildings had been removed and the boundary extended, Ards Airport would be one of the best in the world. It was, he said, a private venture, produced by Lady Londonderry, himself, and Airwork Ltd., and not a municipal aerodrome, but it would provide Belfast with the needed airport—for Northern Ireland would eventually become a centre of commercial aviation. Lying in the shadow of Stewart's Tower, commemorating the work of his great grandfather, Ards Airport would, he hoped, have the same beneficial results for the people of the countryside that Seaham Harbour, founded by his ancestor, had had in the past.

Dr. D'Arcy, Primate of All Ireland, gave the episcopal blessing, and Mr. W. H. Simms, J.P., Chairman of the Newtownards Urban Council, and Viscount Castlereagh, M.P., proposed and seconded a vote of thanks to the Governor after he had unfurled the Civil Air Ensign.

After the school "Cadet" had been christened *Finian the White* by Lady Londonderry, Lord Londonderry boarded one of Mr. Hillman's "Dragons" and broadcast a short message while out of sight of the aerodrome, in order to give the visitors some idea of the value of wireless. The demonstration was none the less impressive because, full in the middle of Dr. D'Arcy's short address, there came clearly over the loud speakers, "Banco OX—Newtownards calling," as if to show everybody that modern machines are not "wandering lonely as a cloud" while passing on their daily business.

#### The Display

There was no lag in the excellent little flying programme which followed, and both Mr. Ivor McClure and Sqd. Ldr. Oliver deserve full marks for their work on the microphone. The ball was opened by Flt. Lt. R. W. E. Bryant, the Chief Pilot and Manager of Ards, who went cleanly through the usual repertoire with *Finian the White* and completed his per-

formance with something that is not often seen nowadays—a true falling leaf, with beautifully timed reversals of control.

A Klemm "Swallow" was put through all its paces by Mr. Collins, an Avro "Commodore" by Mr. Alan Muntz, and an Airspeed "Courier" by Lt. Tillard, of R. K. Dundas, Ltd. In the last the "retractile reactions" were followed most closely as the machine was flown slowly over the crowd.

Mr. R. A. C. Brie, of course, held the stage with the ever-entertaining direct-control Autogiro for, it appeared, rather more than his turn, while demonstrating various methods of approach, and Mr. S. A. Thorn showed us what really can be done with a specially equipped aeroplane. His show becomes more polished every time, and this time he stayed on his back for an interminable period, doubtless because it was raining heavily. The Avro "Tutor," in his hands, appears quite as happy on its back, and Thorn showed us something that is not often seen—a really well executed and steep inverted figure of eight.

Beautiful formations were flown by three pilots of No. 502 (Special Reserve) Squadron from Aldergrove, who must have handled their unwieldy "Ginnies" with vernier throttle movements. The culminating "Prince of Wales' Feathers" was just as spectacular as any performance of heavy bombers could be, and the outside machines closed up again from their steep turns with precious little to spare.

The "Instructor and Pupil" show, performed by instructors from No. 5 Flying Training School, was, if anything, a slightly improved version of their turn at Hendon—except perhaps that the "pupil's" bounce and second landing were even more terrifying on a comparatively small aerodrome. Perhaps people should not be given the idea that flying is difficult, even if clearly shown that mistakes are safe—when made by instructors.

Finally, a single "Fury" from No. 43 Fighter Squadron gave the people of Ulster more speed, more climb, and more delicious noise than anything they can ever have seen or heard. Yet the more impressive exhibition was not an exhibition at all. Immediately after the display a second chequered "Fury" taxied out, and the pair took off in formation, looking for all the world like one solid machine until they went out of sight, still climbing towards Aldergrove.

The Ards Airport, when finished, will be very roughly



L-shaped, with a longest run of 3,050 ft., and it is situated  $\frac{1}{2}$  mile from Newtownards and 9 miles south-east of Belfast. The buildings will extend in the shape of an arrow-head with a permanent terminal building replacing the existing clubhouse, which is, incidentally, a very pleasant one.

It is one of the first eight civil aeronautical ground radio centres in the British Isles, and the station is operated by the Air Ministry and will be situated in the terminal building, from which the transmitter, housed separately about 50 yd. away, will be operated by remote control. Weather reports and information regarding aircraft movements will be available on request, the station being in direct communication with other civil air stations. It will also provide wireless directional guidance for aircraft crossing the Irish Sea.

It may be useful to note the alternative routes for visitors to Ards. The route involving the shortest sea crossing is by Blackpool, where there are two aerodromes, and the Solway Firth to Fortpatrick, and thence 21 miles across the North Channel to Donaghadee and Newtownards. The conspicuous

Scrabo Tower which overlooks the airport is visible on a clear day during the greater part of the crossing. The total distance by this route is 360 miles. It should be realised, however, that the Solway Firth crossing is in itself 22 miles and involves flying over considerable stretches of deserted country on either side of the Firth, which also attracts a considerable amount of bad weather. An alternative is to fly via the Isle of Man to Newtownards from Blackpool or Liverpool. This means two long sea crossings, one over 60 miles to the Isle of Man, and another over 40 miles to the Irish coast, although it is very much shorter in total distance. Yet another way, with a 70-mile sea crossing, is via Bristol, Haverfordwest, and Wexford. This route from London has the disadvantage that Customs must be cleared at three points, Croydon, Heston or Bristol, Kildonan for the Free State, and Newtownards. In addition to this the wireless meteorological and direction-finding services from Newtownards which are available across the Northern sea routes are no use to pilots making the Southern crossing.

## CROYDON

### *Surrey Flying Services : Some Olley Charters : Aerial Lifeboats : The South Coast Service : Mail Contract Injustice*

FIRST of all I owe to Capt. W. Armstrong an apology for inadvertently leaving him out of the people I mentioned last week as posing, more or less gracefully, for the Croydon "veterans" photograph. We all remember Capt. Armstrong flying D.H. 16, D.H. 18, and many other early types.

Then there is Surrey Flying Services, Ltd., a firm which was founded fourteen years ago and has been faithful since then to the Airport of London, which is Croydon. "Surreys" undertake charter work, joy riding, and instruction for ground engineers, as well as pilots' licences, and in these latter types of training their reputation stands high. This company has recently taken an office in the main hall, where already a considerable amount of business has been done across the counter. On Monday, August 27, they had a telephone call from Newcastle requesting them to collect a pugilist in London to do duty for a fellow boxer who had "married a wife, and therefore he could not come." The substitute, a Canadian, by name Paul Schaefer, rushed to Croydon, where pilot "Timber" Woods awaited him, and was flown to Cramlington in 2 hrs. 5 mins. Next day he flew back with S.F.S. to London in remarkably dirty weather.

On Wednesday, August 29, the 7 a.m. K.L.M. machine carried H.R.H. Princes Ingrid of Sweden home after a short visit to this country. The Princess had her car driven up to the aeroplane and embarked without fuss or formality, thanks to the courtesy of H.M. Customs and the emigration officials. It is, perhaps, an apt moment to mention the helpful and considerate attitude of these officials on all such occasions.

Olley Air Service, Ltd., held a "race week-end," carrying no fewer than six leading jockeys, as well as several well-known trainers, to Ostend on Sunday in three flights. They had the satisfaction of seeing their passengers ride 1st, 2nd and 3rd in the big race. Our old friend "Bill" Ledlie, made a remarkable flight to Geneva and back in a day. Before going he had arranged to play a match at a golf links an hour's car drive away from the Airport, and on mentioning his trip to his opponent the latter bet him a comfortable sum he would not keep his appointment or win the match, supposing all that flying could not be done in a day without physical exhaustion. "Bill" arrived on time and won his 18-hole match with ease.

Capt. Olley's American "flying family," who have not used trains at all for six years, apologised for going to Southampton by train recently, because the children wanted to try the train as a novelty. I recently combed London for a han-

som cab to give my schoolboy son a taste of the queer, old-fashioned transport. Everybody ought to travel in a coal-driven train at times, for fun.

Col. Shelmerdine, the D.C.A., flew by Railway Air Services, Ltd., to Belfast, for the opening of the Ards Airport at Newtownards on August 31. In time this airport may be one of the most important in Europe.

A total stranger has been ringing up the various companies at Croydon, remarking casually that he has invented a detachable cabin for air liners, complete with giant parachute, and what about it? The wiser managers have referred him to the Air Ministry, expecting him to become involved in a correspondence which will keep him busy for years. One manager is said to have counter-attacked by suggesting that a medium-sized three-motor aeroplane, with folding wings, might be fitted into all four-engined aircraft so that it could fly away if anything happened.

The airport is positively infested with partridges at present, no less than eleven coveys, one containing at least a dozen birds—or should one say six brace?—having been counted from the Control Tower with powerful glasses.

On Friday last I flew from Croydon to Newquay by Provincial Air Lines, Ltd., in a "Dragon," and although we called at Portsmouth, Southampton, Bournemouth, Haldon and Plymouth, the total journey took only about three hours. This must be one of the most attractive flights in England, with the red Devon cliffs, Dartmoor, and the strange Cornish landscape. The organisation of the flight was good throughout, and the pilot was smartly uniformed and courteous, as well as obviously knowing his job thoroughly. It would seem to be a very difficult route to fly, but this company has kept surprising regularity for over six months. I was astonished to find that no mails were being carried. It seems that the G.P.O. requires a probationary period from most operators. It may be just and right to give the mails to Railway Air Services, Ltd., the day they commence operations, but it cannot be direct or fair to deprive another company, and, incidentally, the public, of the mails, after six months' running.

I have heard it said that R.A.S., Ltd., can obtain mails at once on any new route because it is familiar with G.P.O. methods. Complete nonsense. It is the business of the G.P.O. to hand mails to the company at the starting point and to collect them at the airport of destination, and it is the company's business to fly them from place to place.

This question of internal air mails appears to need attention.

A. VIATOR.

### *The First "86" for Qantas*

During the week the first Express Air Liner for the Australian Air Mail Service has been undergoing trials in the hands of Major Hereward de Havilland, Captain H. S. Broad and Mr. Waight at Hatfield. This machine is the first of the dual control type with an extended and very impressive nose. Captain L. J. Brain, Chief pilot of Qantas Empire Airways, who is going to fly the machine to Brisbane, was an interested spectator.

### *From Calcutta to Port Darwin*

We have received from the Shell Company a most thorough air route schedule, in neat loose leaf form, which they have produced to cover the last leg to Australia. Every kind of information can be found in the 132 pages, and plans given of all the aerodromes on the route, with the facilities provided.

Similar schedules are to be brought out later for the Cairo-Calcutta and the Darwin-Melbourne sections of the Australian route.

**Commercial Aviation****HESTON***The Misr Airwork MacRobertson Race Service : Airwork's New "Commodore" :  
Interesting Birkett Charters : A Portable Neon Light*

**T**HE Misr Airwork service to Baghdad in connection with the MacRobertson Race will be as follows. The first racing machine is expected at Baghdad early on October 21. Misr Airwork are therefore despatching their machine from Cairo at 7.30 a.m. on October 20. The return flight will be made as soon as all the interesting racing aircraft have passed through, but will not be later than October 24. Six passengers can be carried, and the return fare, inclusive of hotel expenses, will be £35. Bookings can be made through any booking agent in Egypt, through Misr Airwork direct, or through Messrs. Cox and Kings (Agents), Ltd., Thos. Cook and Son, and The American Express.

The latest Atlantic flyer, Capt. J. R. Ayling, has been engaged as a regular pilot on the daily services of London, Scottish and Provincial Airways, Ltd., between Heston, Paris and the North of England.

The Airwork School has again added to its fleet of machines. This time it is an Avro 4-seater "Commodore" which will be used mainly for cross-country flying instruction. The Autogiro, which is on order, has not yet arrived, but since the appearance of the new Weir single-seater the School is anticipating full bookings on this machine.

The Press continue to use Birkett Air Service machines. Major Digby flew two journalists into Oxfordshire, and the result was on the front page of a Sunday paper in the words:

"Duchess Throws Jug of Water Over a Visitor." The lady who was so deluged, another journalist, said that her "scoop" was too important to be telephoned, and thereupon annexed Birkett's machine for the return journey, during which she sat writing up her "story." A less eventful trip was made by an American visitor anxious not to miss her connection to Malmö in Sweden. Mrs. H. Edward Manville wirelessed Birkett's from a liner in mid-ocean and was promptly met by them at Cork and flown to Croydon. There she caught the Scandinavian Air Express of K.L.M./A.B.A. at 1.15 p.m.

Further tests of the Brupias portable Neon landing lights have been carried out by Captain Baker, by arrangement with the International Aviation Agency. The lights, each housed in a watertight glass cylinder 15 inches high, derive their current from a 6-volt battery in circuit with an interrupter coupled to a specially wound three-point transformer (primary), giving a very high voltage secondary output varying from 35,000 to 60,000 volts. Six of these, ranged in a row on the airport, made an impressive sight and were easily picked out from a distance. For landing purposes these lights are quite as satisfactory as the ordinary petrol flare, but as regards safety from fire and for ease of handling on the ground and moving in the event of a change of wind, they are, of course, far superior. They should prove very useful on aerodromes where no electric current is available.

**FOR OPERATORS**

**T**HE loading sheet reproduced below in table form, which is being issued as a folder by Airspeed, Ltd., is well worthy of copy by other firms, and constitutes one of the handiest things of its kind we have seen. By its use operators will immediately be able to ascertain the largest load and range they can obtain under any given set of circumstances. With the Armstrong-Siddeley "Cheetah" engine,

the "Courier" has an exceptionally good performance, as well as a high pay load, and is already in use for air line work. One of this type of machine was recently demonstrated in Copenhagen during the Aero Show in that city, and was flown by Prince Axel of Denmark. Afterwards this "Courier" was demonstrated at Malmö, Hamburg, Rotterdam, and Antwerp.

**TOTAL WEIGHTS OF PASSENGERS AND LUGGAGE**

Lbs. Luggage per Passenger.	0	20	25	30	35	40	45	50
1 Passenger ...	160	180	185	190	195	200	205	210
2 " ...	320	360	370	380	390	400	410	420
3 " ...	480	540	555	570	585	600	615	630
4 " ...	640	720	740	760	780	800	820	840
5 " ...	800	900	925	950	975	1000	1025	1050

Data—Tare weight 2,348 lbs., plus Pilot 175 lbs. = 2,523 lbs.  
Average Cruising Speed 145 m.p.h.  
Average Petrol consumption, 13.75 gallons per hour.  
Average Oil consumption, 6 pints per hour.  
(50% margin has been allowed on this oil consumption).

**THE PAYLOAD AT VARIOUS RANGES**

Range (miles) ...	Standard Tanks.				Extra Tanks.		All up Weight	Yards to Unstick 5 M.P.H. Headwind
	200	300	400	612	800	1000		
Fuel Galls. ...	19	29	38	58	76	95		
Standard—58 Gallons								
Oil Galls. ...	1½	2½	3	5	6	8		
Standard—8.5 Gallons								
Pay Load at								
Full Load ...	1317	1234	1157	985	837	672	4000	225
¾ Load ...	947	854	787	715	467	302	3630	160
½ Load ...	577	490	415	243	95	—	3260	135

60 lbs. must be allowed for wireless, if carried.  
All Up. Airworthy Weight 4,000 lbs.

**The International Air Traffic Association**

The Congress of the International Air Traffic Association is now being held at the Hague. Representatives of twenty-four European air transport companies are present. Imperial Airways is represented by Mr. D. H. Handover (Traffic Manager) and Major K. M. Beaumont (Legal Adviser), who arrived at the Hague on August 25. One of the questions to be discussed at the Congress is the unification of international documents in connection with air transport.

**Rotors Over Mount Pleasant**

The idea of using the roof of the G.P.O. and an Autogiro for direct air mail delivery is not a new one, but the Postmaster-General is to be congratulated in conducting such a bold experiment. Obviously he is very keen on his new air mail system.

Last Monday Mr. R. A. C. Brie hung about on his sky hooks just over Mount Pleasant, making general observations, after the Air Ministry had granted special permission for such an experimental flight.

Mr. Brie at this year's display proved that message dropping and collecting could be carried out within a small area, and there is little doubt that, were the roof of the G.P.O. flat, he could have put the Autogiro down quite comfortably. Taking, however, would be quite another matter, and, after all, the C.30 has one engine only—and the best of engines fail very occasionally.

However, we shall see what we shall see.

**Rand Airport Developments**

It has been decided to proceed with the building of a new Meteorological station at the Rand airport, and also to build a house to accommodate a resident Customs Officer. The present Meteorological station, which is near the aerial masts, is now considered unsuitable for growing traffic conditions, chiefly on account of its isolation and the limited space available. The new station will be built on the western side of the Administration block, now under construction, and will form part of the development scheme of the airport. The quarters for the permanent Customs Officer are to be erected adjoining the residential quarters of the Imperial Airways staff.



## REPORT ON CIVIL AVIATION

**B**ELOW we give a résumé of the *Report on the Progress of Civil Aviation, 1933*, which has just been issued by the Air Ministry. Copies of this Report may be obtained from H.M. Stationery Office, Kingsway, W.C.2 (price 5s. net).

### CIVIL FLYING

Imperial Airways, Ltd., operated daily service between London and the Continent; a twice-weekly service between London and Egypt; a weekly service from London to India, extended to Burma, Federated Malay States, and Singapore; and a weekly service from London to the Sudan, Uganda, Kenya, Tanganyika, the Rhodesias, and South Africa.

Passenger and goods traffic showed, once again, a gratifying increase, 54,260 individual passengers and 900 tons of mails and freight having been carried during 1933 over its regularly operated routes, as compared with 45,150 and 770 respectively during 1932. The total miles flown increased from 1,766,000 in 1932 to 1,969,000 in 1933.

The European summer time-tables provided connections with the services of other air lines, so that cities in countries as far distant as Austria, Czechoslovakia, Spain, Norway, and Sweden were brought within a day's flying of London. Traffic on the Empire services also showed a considerable increase, the total ton-miles recorded during 1933 being 1,474,200, as compared with 1,015,000 in 1932.

Investigations were continued during the year regarding the possibility of operating transatlantic air-mail services, and arrangements are under discussion with the Newfoundland and Canadian Governments and with Canadian Airways Ltd. At the same time proposals for co-operation with American interests will, it is hoped, result in the early institution of a service between Bermuda and the U.S.A.

### Internal Regular Services

The following companies operated regular internal air services during 1933, in addition, in most cases, to pleasure flying and special charter work (a detailed list of these services is given in the Report): Blackpool and West Coast Air Services Ltd. (Liverpool, Blackpool, and the Isle of Man); British Amphibious Air Lines Ltd. (Blackpool and the Isle of Man); Eastern Air Services (Nottingham and Skegness); Great Western Railway Co., per Imperial Airways Ltd. (Cardiff-Haldon-Plymouth, later extended to Birmingham); Highland Airways Ltd. (Inverness-Wick-Kirkwall, Orkney Is.); Hillman's Airways Ltd. (Romford-Clacton, Romford-Paris-Vichy, Romford-Manston); International Airlines Ltd. (Croydon-Portsmouth-Southampton-Plymouth); Midland and Scottish Air Ferries Ltd. (Renfrew-Campbeltown-Belfast, Renfrew-Campbeltown-Bowmore, Islay, Liverpool-Dublin); Jersey Airways (Portsmouth-Jersey, later extended to Heston, London); Norman Edgar Western Airways Ltd. (Bristol-Cardiff); North Sea Aerial and General Transport Ltd. (Hull-Grimsby); Portsmouth, Southsea, and Isle of Wight Aviation Ltd. (Portsmouth-Ryde, Shoreham-Portsmouth-Ryde-Shanklin); Spartan Air Lines Ltd. (London, Heston-Ryde-Cowes).

### Air Survey and Photography

The Aerofilms Ltd. library of 40,000 photographs of general interest was increased to 43,000 during 1933, including additional views of 119 towns in the United Kingdom, Channel Islands, and Irish Free State. Contracts of particular interest included those for the photographing of an aqueduct 14 miles long, the covering of over 31 miles of ground in Hampshire for archaeological research, and a photographic record of the new Silent Valley Reservoir in Northern Ireland.

The Air Survey Co., Ltd., has concentrated upon establishing air photography as a recognised method of rapid map revision—mainly covering scales of 6 in. and 25 in. to 1 mile. Such areas, totalling 200 sq. miles, have been photographed in Middlesex, Surrey, and Essex. The company has also supplied vertical photographs of numerous areas in Greater London to the Ordnance Survey Office.

The activities of the Aircraft Operating Co. have been confined to its African associated concern, which carried out some twenty contracts, consisting of township surveys and surveys for mining companies.

H. Hemming and Partners Ltd. was incorporated in September, 1933, and secured a contract with the Bulolo Gold

Dredging Co. Ltd. in New Guinea for the outfitting of that company's air organisation with air photographic equipment required for the examination of certain areas in New Guinea. An important contract was also secured with the Western Mining Corp. Ltd. for an air survey of certain areas in Western Australia.

### Miscellaneous Services

Heston Air Port, which is owned and operated by Airwork Ltd., cleared for Customs 2,932 persons during 1933, an increase of 57.5 per cent. over the previous year. Airwork School of Flying showed an increase of 50 per cent. in the number of hours flown. In May, Airwork Ltd. took over the management of the municipal airport at Manchester (Barton).

Surrey Flying Services carried 293 passengers on special charter flights, 25,600 miles were flown, and approximately 10,000 joy-ride passengers carried.

The National Aviation Day Display Campaign was continued during 1933, and 306 towns were covered and more than 800,000 people paid for admission to the displays.

### Schools and Clubs

A total of 6,425 hours' flying was carried out by Air Service Training during 1933—an increase of 50 per cent.—and eighty-seven persons, civilians and air force officers of thirteen different nationalities, underwent instruction. During 1933 sixty-one civil pupils received training at the de Havilland School of Flying, while, in addition, seventy-seven persons, including sixty-three under the *Daily Express* Scheme, were given trial lessons.

At the end of December last 136 students had been accepted for training, on completion of their probationary term, at the College of Aeronautical Training.

The membership of the Guild of Air Pilots and Air Navigators of the British Empire had increased to 171, and the number of associates to 106, by the end of 1933.

The number of Light Aeroplane Clubs at the end of 1933 was eighteen, and three new clubs were approved—Brooklands Flying Club, Cardiff Aeroplane Club, and Scarborough Aero Club.

### Important Flights

Sq. Ldr. O. R. Gayford and Flt. Lt. G. E. Nicholetts left Cranwell in the Fairey Long-Range monoplane (Napier "Lion") on February 6 and landed at Walvis Bay, S.W. Africa, on February 8, having covered a total distance of 5,341 miles in 57 hours 25 minutes—a world's long-distance record, subsequently beaten by Rossi and Codos in August, 1933.

J. A. Mollison, flying a D.H. "Puss Moth" ("Gipsy Major"), left Lympne at 8.12 a.m., February 6, and arrived at Port Natal, Brazil, 6.20 p.m., February 9. Distance, 4,600 miles; time, 3 days 10 hours 8 minutes.

Mr. and Mrs. J. A. Mollison, flying a D.H. "Dragon" (2 "Gipsy Major"), left Pendine Sands at 12 noon, July 22, and arrived at Bridgeport at 9 p.m., July 24. Distance, 3,300 miles; time, 39 hours.

Air Com. Sir Charles Kingsford Smith, flying a Percival "Gull" ("Gipsy Major"), left Lympne on October 4, arrived at Wyndham, Australia, October 11. Distance, 10,000 miles; time, 7 days 4 hours 44 minutes.

C. T. P. Ulm, accompanied by G. V. Allen, P. S. G. Taylor, and J. Edwards, flying an Avro X monoplane (3 Wright "Whirlwind"), left Harmondsworth at 10.30 p.m. on October 12, arrived Derby, Australia, at 4.15 p.m., October 19. Distance, 10,000 miles; time, 6 days 17 hours 45 minutes.

Sq. Ldr. The Marquess of Douglas and Clydesdale and Flt. Lt. D. F. McIntyre, in Westland "Wallace" and Houston-Westland aeroplanes (Bristol "Pegasus"), flew over Mt. Everest from Purnea, on April 3 and April 19, a height of over 30,000 ft. being obtained.

### AIRCRAFT DEVELOPMENT

#### New Types

The following new types of aircraft were granted Certificates of Airworthiness during 1933:—Airspeed "Courier" (Armstrong-Siddeley "Lynx IVC"); Cierva Direct Control Autogiro C.30P (Armstrong-Siddeley "Genet Major"); De Havilland "Tiger Moth" ("Gipsy Major"); De Havilland

"Leopard Moth" ("Gipsy Major"); Klemm "Swallow" (Salmson A.D.9R); Miles "Hawk" ("Cirrus III"); Shackleton-Lee Murray, S.M.I. (Hirth H.M.60); Westland "Wessex" 8-seater (3 Armstrong-Siddeley "Genet Major"); General Aircraft Monospar S.T.4 (Pobjoy "R"). New types under construction at the end of 1933 included:—Avro 642 (3 Armstrong-Siddeley "Jaguar"); Avro 652 (2 Armstrong-Siddeley "Cheetah"); Blackburn 10; Boulton & Paul 71A (2 "Jaguar"); Comper "Mouse" ("Gipsy Major"); Comper "Streak" ("Gipsy Major"); De Havilland "Dragon Six" (2 "Gipsy VI"); De Havilland "Express Air Liner" (D.H. 86) (4 "Gipsy VI"); Klemm "Eagle" ("Gipsy Major" or Napier "Javelin"); Percival "Mew Gull" (Napier "Javelin"); Short "Scion" (2 Pobjoy); Short "Scylla" (4 Bristol "Jupiter").

### Engines

The following engines were produced, or made available for civil use:—Siddeley "Cheetah," 7-cyl. a.c. radial, 275 b.h.p. at 2,100 r.p.m.; Bristol "Pegasus" (II.M.2 and II.M.3), (II.L.2 and II.L.3) and (II.U.2 and II.U.3), 9-cyl. a.c. radial; Bristol "Mercury" V/S.2, 9-cyl. a.c. radial; Bristol "Phoenix" compression-ignition engine; De Havilland "Gipsy Six"; Napier "Rapier II" and "Rapier IV"; Pobjoy "Niagara," "Cataract," and "Cascade"; Wolseley "A.R.9," Mk. II.

### GENERAL AIRCRAFT APPOINTMENT

Dr. D. H. Hollis Williams, well known for his work with the Fairey Aviation, Ltd., on the design of many successful aircraft, including the large monoplane which broke the long-range record, has now resigned his position with that company, to become chief engineer for General Aircraft, Ltd., the builders of the Monospar ST.10, which won the King's Cup race this year. It is also announced that arrangements are being made to convert General Aircraft, Ltd., into a public company.

### A "GULL" IN SCANDINAVIA

During his stay in Denmark for the Copenhagen Aero Show, Capt. E. W. Percival gave a lot of demonstration flights on his "Gull" ("Gipsy Six"), and all told he covered something like 3,000 miles, including a visit to Sweden, where, in company with Flight Lieutenant Baron von Schinkel, Capt. Percival called at all the leading aerodromes. While in Denmark the "Gull" was flown by a number of pilots, including pilots of the Air Force, who expressed admiration for the good performance. On his return flight Capt. Percival left Kastrup airport at 3.15 p.m. and arrived at Gravesend at 8 p.m., having made a stop of one hour's duration at Amsterdam. The flight from Kastrup (Copenhagen) to Amsterdam occupied 2h. 22m., and from Amsterdam to Gravesend 1h. 23m.

### A CHANGE OF NAME

Messrs. Lacayo and Robson, whom we announced as starting in business under the name of Aircraft Sales, Ltd., inform us that their firm will in future be called Aircraft Distributors, Ltd. Their telephone number will be Gerrard 7222.



Mr. F. S. Spriggs.

### THE NEW "GLOSTER" BOARD

The board of directors of the Gloster Aircraft Co., Ltd., which was taken over by Hawker Aircraft, Ltd., in March, has now been reconstituted. Mr. F. S. Spriggs, who was one of the original members of Hawker Aircraft, has been appointed chairman of the Gloster Aircraft Co., Ltd. Mr. T. O. M. Sopwith and Mr. F. Sigrist become joint managing directors, Mr. H. Burroughes and Mr. D. Longden directors, and Mr. F. I. Bennett a director and chief engineer.

### Ground Organisation

At the end of 1933 there were seventy-nine licensed "permanent" aerodromes, landing grounds and seaplane stations in Great Britain, as compared with sixty-eight in 1932. There were sixteen municipal aerodromes established by December 31. Considerable interest has been displayed by local authorities in the subject of aerodrome management, but no one scheme has yet received general approbation.

The transmitting and direction-finding station at Manchester Airport was completed and put into operation during 1933, and the control of Heston radio station (for weather reports) was taken over by the Air Ministry. During the year 3,083 requests for forecasts for cross-country and Continental flights by civil pilots were dealt with by the Forecast Service at the Air Ministry. A meteorological station was established at Barton Airport, Manchester, and consideration was given to the question of meteorological organisation for certain internal air routes in the British Isles.

Further information concerning air navigation, wireless direction finding, lighting and marking high tension cables, air maps, etc., is given in this report. The rest of the report deals with administration, civil aviation votes in 1933-34, relations with foreign countries, the Gorell Committee, investigation of accidents, etc., statistics of civil flying, the Dominions, India and the Colonies.



FOR AUSTRALIA: A photograph taken at Croydon of the latest Monospar ST.11, which, as already recorded in *Flight*, is being delivered to the Australian Government. This machine has large fuel tanks giving a range of 1,100 miles. (Flight Photo.)

### NATIONAL BENZOLE SUCCESS AT LYMPNE

In the Folkestone Aero Trophy Race the first, second and fourth; in the Cinque Ports Wakefield Cup Race the first, second, third, fourth, fifth and sixth; and Sir Charles Rose, winner of the Yates Cup for the fastest time recorded for the meeting, all used National Benzole Mixture.

### NEW COMPANIES

NORTHERN FLYING SERVICES, LTD., 8, The Leas, Grove Road, Wallasey, Ches. Capital, £200 in £1 shares. Objects: To carry on the business of manufacturers, hirers and repairers of and dealers in aeroplanes and aircraft of all kinds, etc. The permanent directors are: Herbert V. Armstrong, 24, Studley Road, Wallasey; Jas M. Anderson, 40, Leasowe Road, Wallasey.

ANGLO-HELLENIC TOURS, LTD., First Avenue House, High Holborn, W.C.1. Capital, £500 in 400 6 per cent. cumulative preference shares of £1 each and 2,000 ordinary shares of 1s. each. Objects: To inaugurate and carry on transport services, tours and excursions, to carry on the business of carriers of passengers, goods and mails by air, sea and land, proprietors of motor coaches, char-a-banc, omnibuses, lorries, motor cars, ships, boats, aeroplanes, seaplanes, flying boats and aircraft generally, railway, travel and general agents, etc. The life directors are: Alexander W. M. Dalison, 49, Palace Court, W.2, journalist (director of Alexander Vick, Ltd., and Atlantis Windscreens Co., Ltd.); Mrs. S. Livas, Park Square House East, Regent's Park, N.W.1.

### PUBLICATIONS RECEIVED

On the Wing. By David Masters. Price 8/6 net. London: Eyre and Spottiswoode, Ltd.

### AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

### APPLIED FOR IN 1933

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225. VICKERS-ARMSTRONGS, LTD. and J. P. WATSON. Anti-aircraft gun fire control apparatus. 414,742.)